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The Cattle of the Gold Coast*

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The cattle of the Gold Coast from the coastal plains to the north of the Northern Territories are unhumped, small and of good conformation with bullocks weighing from three to five hundredweight. In general appearance, they are not unlike miniature British Shorthorn cattle, hence the writer coined the name West African Shorthorn for this type of ox, a name by which it is now known in the literature on the subject. Like most other cattle throughout the world, the West African Shorthorn is not a pure breed but a mixture of various types of cattle though here and there are found varieties which correspond to one or other of the basic variations from which the present animal is derived. In order to understand fully the origin of the West African Shorthorn type, it is necessary to study briefly the origin of cattle.

The Origin of Domestic Cattle.—The oldest records of cattle proper are fossil remains of the Pliocene period. Bos planifrons, Bos acutifrons and Leptobos, are names which have been given to some of the wild Pliocene species. Some of these ancient cattle had horns in the male but the females were hornless. Arenander claims that cattle were originally polled but were gradually succeeded by species with horned males and eventually by species with horns in both sexes.

In the Pleistocene period, these ancient forms had disappeared or become modified and the wild urus (Bos primigenius) was widespread throughout Europe and Asia. It occurred in Africa as Bos primigenius Hahni, a variation from which the domestic Hamitic Longhorn cattle arose. Gradually, the Asiatic uri became slightly differentiated from the European animals, developed along special lines and this form is known as Bos Namadicus. In Neolithic times, remains are found of a small short-horned bovine, Bos Brachyceros, which is believed by many to be descended from a small wild species. However, remains of the alleged ancestor have never been definitely found and Duerst is of opinion that it is simply a diminished form of the urus. My investigations tend to confirm the opinion that the urus is the common ancestor of all modern cattle.

Bos Primigenius or the European Urus.—This huge bovine was widely distributed throughout Europe during the Pleistocene period and existed in the wild state until the Middle Ages. The urus was of great size, being about one-and-a-half times the size of an animal of the larger modern British breeds. Caesar describes the urus as " in size being little inferior to elephants although in appearance, colour and form, they are bulls." Records of the urus are abundant in Pleistocene deposits, bones being found in the layers of many palaeolithic and neolithic settlements. Neolithic drawings of the urus are not uncommon. However, there is little or no evidence of the European urus having been largely domesticated. The indigenous Pleistocene inhabitants were hunters and domesticated cattle were probably brought into Europe by the ancestors of the Swiss Lake-dwellers who migrated west from Asia. However, it is probable that the European urus was later tamed by the Lake-dwellers or by some of the people who learned cattle-tending through their agency. The cattle brought to Europe by the Swiss Lake-dwellers were Bos Brachyceros animals. The variety of Bos primigenius Hahni existed in Egypt. This breed, known as " Hamitic cattle " was domesticated in prehistoric times in Egypt and from thence spread over all North Africa along the East Coast to South Africa and to West Africa.

Bos Namadicus (the Asiatic Urus).—This variety of the urus differs in that the horns are more upright and some skulls are said to possess characteristics of the genus *Bibovina*. It appears probable that Bos Namadicus was the particular variety of wild cattle to be first domesticated in Mesopotamia and Turkestan. At Anau in Southern Turkestan this ox appears in a domesticated state about 8000 B.C. Owing to the increasing aridity of the area it is assumed that wild cattle were attracted to the farms of the agriculturist in search of food and were thus gradually domesticated. The same animal is found again about 3000 to 4000 B.C. in Babylonia and Egypt. About 6000 B.C. this large-horned stately ox had disappeared from the Anau deposits and was replaced by a small, small-boned, short-horned bovine (Bos Brachyceros). According to Duerst, this was simply a form of the original Bos Namadicus degenerated

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by unfavourable conditions of life, inbreeding, insufficient nourishment and immature pairing. Owing to increased aridity in Turkestan and Mesopotamia, continual migrations of pastoral people to Europe, Africa and other parts of Asia took place, which would explain the existence of these forms of cattle in various countries.

Zebu cattle are mutations arising from the Asiatic urus. The hump and the large dewlap are the products of domestication and selection. Several present breeds of cattle have no humps though similar to zebus in all other characters. According to Hilzheimer, the zebu cannot be traced back further than 200 B.C. even in Mesopotamia.

Bos Brachyceros (*Bos Longifrons*).—This small breed of shorthorned cattle is often called the Celtic Shorthorn. Some authorities hold that this breed is descended from a small wild ancestor, others consider that it is a variation of the urus due to unfavourable environment. No definite proof of a specific wild ancestor exists and there appears to be no valid reason against its being descended from the urus. Size, shape of horns, slight anatomical differences, especially in the skull, are the usual pleas of the supporters of the specific species theory. However, there is no question that Bos Brachyceros is a distinct type and in Africa, in particular, cattle are clearly divided into the Bos Namadicus form, *e.g.*, zebus, Bornu, Nilotic breeds, the Bos primigenius Hahni form, *e.g.*, Hamitic Longhorn, and the Bos Brachyceros form, *e.g.*, forest and lagoon cattle. It is not disputed that the urus and the Bos Brachyceros both come within the one generic division of Bos Taurus. So far, naturalists have been unable to arrive at a definite opinion as to whether they are descended from different species of wild ancestors and which type or species has been perpetuated in existing races of cattle. As regards European cattle, even the famous British Park breeds, it is likely that most are of mixed descent.

According to Adametz, Bos Brachyceros differs from the urus on account of its smallness and its different skull structure. The forehead is uneven, the more or less highly developed frontal crest is joined to the triangle reaching over from the back of the head and is only missing in cases of excessive development of the frontal crest. The orbits protrude very much over the medium of the forehead. The *fossae temporalis* are broad and not very indented, the premaxillae are short and do not extend to the edge of the nasal bones. The horns are definitely smaller and less developed than in the urus. This description is a good picture of the West African Shorthorn. I have endeavoured by measuring and comparing skulls of various breeds of cattle, to determine exact differences between those of the urus and of Bos Brachyceros. My results show the similarity between all breeds of cattle. Most workers on the origin of cattle appear to have ignored anatomy. For instance, great importance has been placed on the shape of the frontal crest as a means of determining from what ancestor cattle are descended. The shapes of the frontal crest are as follows:—

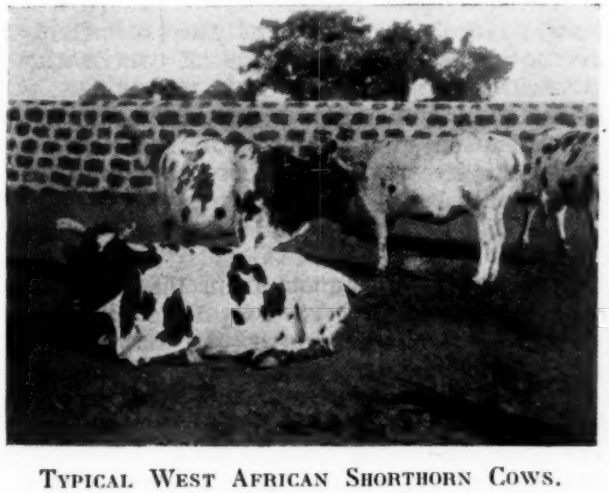
Polled Cattle Bos brachyceros Urus type

I found that the shape of the frontal crest depends on the size and development of the horns. It is obvious that huge horns demand a strong supporting frontal crest and the shape of the skull varies in individuals. For instance, I came across three skulls of cattle of the same breed, the Mysore, which showed the three types of frontal crest. No. 1 had a typical "Bos Brachyceros" crest with medium horns, No. 2 with huge horns had the "urus type" of crest while No. 3, with very light deer-like horns, had a frontal crest similar to polled cattle. I have likewise found the shape of the frontal crest to vary in all horned breeds in a more or less similar manner. The size and shape of the horns of cattle are other points which many investigators explain as showing differences in origin. While horns tend to remain more or less the same over long periods in breeds of wild animals, the varying conditions of domestication affect the growth of horns. In cattle kept under domestication by agriculturists who require milk, flesh or docility, horns and bones tend to decrease while conformation improves. Large herds of cattle belonging to pastoral people ranging over large tracts of country do not tend to show much decrease in horn and bone development while conformation does not improve. The development of huge horns by selection is a prominent feature of many African nomadic herds; in these cases the general conformation of the animal is sacrificed to this factor. The protrusion of the orbits is another varying factor, though more constant than any other. The shape of the *fossa temporalis* is largely dependent anatomically on horn development and thus varies considerably. The premaxillae also vary in individuals. A very varying factor is the angle of the occipital face of the skull as compared to the frontal face, the angle depending much on the size and weight of the head: the heavier the head the more acute the angle and *vice versa*. In some zebus, *e.g.*, Mysores, the nasal bones are firmly articulated with the frontal, malar, maxillae and premaxillae bones but in other zebus, *e.g.*,

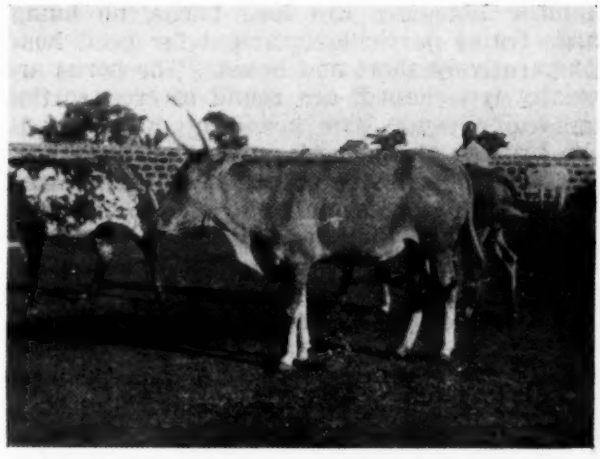
Sudanese, they are not and the premaxillae often do not touch the nasals.

The Introduction of Cattle into Africa.—The oldest African domesticated bovine animal is the descendant of the African urus and is named the Hamitic Longhorn. This is the animal which appears in the most ancient Egyptian drawings. The Sahara before 6500 B.C. must have been an ideal range for live-stock with its great rolling grass plains. After this introduction, it is well to deal with the three great breeds of cattle which go to form the unhumped cattle known as the West African Shorthorn. It is also meet here to define the West African Shorthorn. This name was used by the writer some years ago to describe the unhumped cattle of West Africa because there was no definite popular name for them. Some referred to them as "taurine cattle," others as "pagan cattle" and so on. The name West African Shorthorn is now used generally in the literature on the subject. I might explain that I do not use the term in any generic sense but from a broadly descriptive viewpoint. This has misled casual observers into the mistake of regarding the West African Shorthorn as a homogeneous breed, local to the Gold Coast, whereas genetically the West Africa Shorthorn is extremely heterogeneous, that being accentuated by lack of planned breeding on the part of the owners of the cattle, whose constitution is largely the result of chance. The West African Shorthorn is a mixture of the three great basic breeds, the Hamitic Longhorn, the Brachyceros (shorthorn) dwarf cattle and the zebu. These will now be dealt with separately.

The Hamitic Longhorn.—The Hamitic Longhorn is the oldest African bovine and the least known. Many well-informed people have never heard of him and yet his influence is apparent everywhere and most of the humped and



Typical West African Shorthorn Cows.



Cross N'Dama—Zebu Heifer.

unhumped cattle of Africa have an admixture of Longhorn blood. The Hamitic Longhorn is the domesticated descendant of Bos primigenius Hahni, the African urus, which is supposed to have been a variation of the European urus. It is more probable that both these variations arose from the same ancestor but developed along specialised lines in Africa and Europe respectively. The African urus probably ranged the Sahara in pre-desert days. The rainfall of the Sahara diminished about 6500 B.C. and it is known that the Final Capsian people, who moved from that region to Asia, first domesticated the African urus, which developed into the domestic Longhorn. It is known that the Hamitic Longhorn was domesticated prior to Neolithic times and is the first ox portrayed in Egyptian drawings. The breed is found almost pure in Liberia, Guinea and parts of Morocco. In the former places, it is known as the N'Dama and the present day N'Dama is almost identical with the Longhorn of the ancient Egyptian drawings. Inaccessibility of habitat was the main factor in the preservation of the original characters of the Hamitic Longhorn. It is only in remote and wild parts of West Africa that any breed of cattle is found uncrossed. The few places where the Brachyceros (Shorthorn) is found in its original form are also far from the beaten track or from the influence of other cattle. The main distinguishing features between the three great breeds of cattle are those of conformation and differences in the osteology. I do not propose to deal at length with the osteological points but merely indicate the principal ones. The differences have been dealt with exhaustively by Curson and Epstein in the *Onderstepoort Journal* of October, 1934. The osteological differences are mainly those of the development of the horns and the situation of the orbit. The characteristics of the

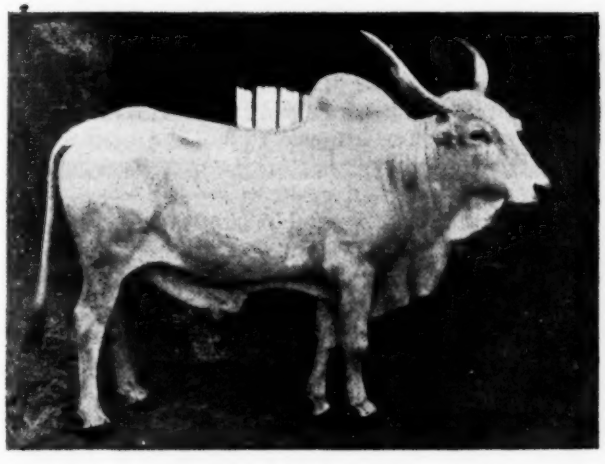
Hamitic Longhorn are long horns, no hump, large frame particularly suited for beef, head comparatively short and broad. The horns are usually lyre-shaped, are round in cross-section and are upright. The horn core has a stalk-like process at the neck, a pearled wreath at the base and the cores are deeply furrowed. Among the representatives of the Hamitic Longhorn are the Scottish West Highland cattle, which are similar in conformation and points to the West African type, the N'Dama, though the colder environment has produced a long shaggy coat in place of the fine-textured hair of the latter. The Hereford is said to be derived from the Hamitic Longhorn. These cattle got to Britain along North Africa and by Spain and Portugal, from whence they also were taken to Brazil. It is interesting that one of the most picturesque mountain breeds of British cattle should be of African origin and illustrates the hardiness of the breed. The breed type selected for illustration here is the N'Dama, whose basic colour is dun varying from a dark black dun with a dun dorsal stripe to light dun as a self-colour. There is a light dun ring round the nostrils. The N'Dama cattle until a few years ago were found in the Fouta Djalon mountains of French Guinea but have now spread over a large part of West Africa as this breed is especially good for stock improvement and is used both by the French and British authorities and the natives themselves for improvement work. The N'Dama is as pure a type of Hamitic Longhorn as is available in modern times but it is a moot point whether even this remarkable breed is undiluted Hamitic Longhorn, as there is a possible admixture of zebu. However, the N'Dama has bred true for so long that his points and characteristics have become fixed and in crossing, most of the N'Dama features are reproduced in the offspring. This is the breed *par excellence* for improving inferior cattle. Being direct descendants of the original African bovine, such N'Dama crossing both improves the inferior breed and at the same time increases its resistance to the ordinary bovine diseases of West Africa, the latter factor being peculiar to this bovine. There are many improved cattle which when crossed with West African cattle, improve them as regards size and conformation but at the same time lower the resistance to local diseases and thus nullify the benefits of the cross. It is this lowered resistance to local diseases that in some areas renders abortive the improvement of the small West African Shorthorn by crossing with the zebu, the resultant crosses proving too susceptible to trypanosomiasis. Five years ago, the Government Veterinary Farm at Pong-Tamale started improvement work with N'Dama bulls and experiments followed by exhaustive field tests in moderate parts of the Northern Territories have shown that N'Dama bulls improve the local unhumped cattle exceedingly and tend to make them hardier at the same time. There is, however, so much Hamitic Longhorn in the composition of the Gold Coast cattle that there are many animals among the local herds which have the typical Longhorn conformation and markings, though the horns are seldom the splendid sweeping appendages of the pure N'Dama. The Hamitic Longhorn was the Holy Apis of ancient Egyptian history. Writers have mistakenly described the Holy Apis as a zebu without a hump but this is obviously erroneous from a study of the general conformation and points, which are those of the ancient African Hamitic Longhorn. The Apis had to be black with a white square on the forehead,

The Buduma cattle of the islands of Lake Chad are similar to the Hamitic Longhorn of the Egyptian drawings. They are much larger than the N'Dama and larger than the average zebu and have no hump. They would appear to be the nearest living cattle to the old African urus. The tradition of these cattle is that they were brought by invaders from the Nile who, after a period, were defeated and took refuge in the islands in Lake Chad. Residence upon these islands has meant the maintenance of the purity of these interesting cattle. In conformation and points, they are larger editions of the N'Dama cattle but the coloration is different, being usually black and white.

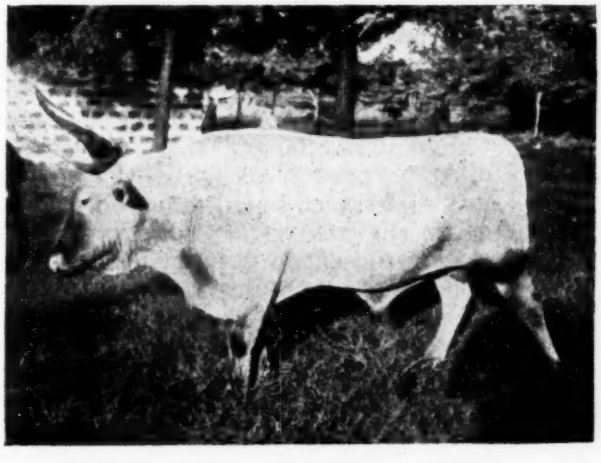
The Hamitic Longhorn, taking the N'Dama as a type specimen, is excellent from the veterinarian's viewpoint as he is very resistant to trypanosomiasis and appears to possess a breed resistance up to a certain point and does not have the great susceptibility to rinderpest of the Brachyceros cattle.

The Brachyceros or True Shorthorn.—This animal is derived from the bovine described by Epstein when he observes "it is safe to assume that there lived in part of Asia a local subspecies of Bos primigenius, in the domestic descendants of which those physical characteristics that, throughout the animal world, are found only in the state of domestication and which in Bos taurus, are called brachyceros, became fixed by mutation." This small breed of cattle arrived in Egypt at the end of the Neolithic era and remained the principal breed until the arrival of the zebu during the New Kingdom from 1580 B.C. This type of bovine is best known as the Celtic Shorthorn of Roman days. In Lower Egypt proper, the dominant bovine is still the small Shorthorn, an animal eminently suited to the local conditions where the cattle live among the fallaheen in the same houses. After entering Egypt, the Shorthorn cattle spread along

the Mediterranean seaboard and to the south of the Sahara into the Western Sudan. The result of the invasion of West Africa by the Shorthorn cattle was general fusion with the Hamitic Longhorn and most unhumped cattle are a mixture of the two breeds with sometimes, a third, the zebu, entering into the picture. Wherever Brachyceros (Shorthorn) is found fairly pure, there it is a small uneconomic dwarf animal similar to its Brachyceros ancestors. The lagoon cattle of the coastal parts represent the nearest modern animal to the original Shorthorn and these are very small indeed, very few being more than nine hands high (36 inches). The live weight is from 150 to 300 lb. The horns are short, fine and dense in texture, no hump, the head has an elongated frontal region, which is concave and the animal is among the smallest dwarf breeds in existence. The horns are horizontal and are flattened from front to back, oval in section. The horn core has no stalk-like process, no wreath at its base and the cores are not well marked. The small British cattle which arose from the Celtic Shorthorn were of similar conformation and the last pure representative was probably the old breed of small West Highland black cattle found in the Hebrides, which died out in the middle of last century. Unchanged Brachyceros cattle are too small for modern economic conditions. Nevertheless this small ox enters into the composition of some 50 per cent. of the cattle of West Africa and practically all the cattle of the Gold Coast. The predominant colour, like that of the Celtic ox, is rusty red-brown with a reddish-dun dorsal stripe. It is still possible to secure type specimens of the original breed in the Gold Coast, particularly in Appolonia, in the Brong country to the west of Yeji and along the Black Volta, both the latter areas being in the Northern Territories. Elsewhere the Gold Coast cattle are a mixture of Hamitic Longhorn and West African Shorthorn, usually with zebu blood. These ancient West African Shorthorn cattle are worth seeing from the view of their small size and the calves are little bigger than ordinary pi-dogs. It is a matter of time until it will no longer be possible to obtain a specimen retaining the dwarf characteristics of the true West African Shorthorn as such animals are unsuited to modern market conditions, being not only deficient in flesh, killing not more than 40 per cent. of the live weight, but the cows have little milk with very poor underdevelopment. The superficial genetical factors of the Brachyceros type of bovine appear prepotent compared with those of the zebu because in areas where the cattle are a result of the mixture of the two breeds, the cattle tend to conform to the obvious Shorthorn points. Like the Hamitic Longhorn, the true Shorthorn has a high resistance to indigenous diseases though not so great as the former, as evidenced by the tendency to reversion to dwarfism of the latter after raising of the size by selection and other factors. From present research evidence, the situation suggests that the Hamitic Longhorn possesses a breed resistance to protozoa generally but that the West African Shorthorn possesses a local resistance to local strains of protozoa and often breaks down to such diseases when moved to a new habitat. Experiments carried out throughout the Gold Coast with N'Dama cattle (Hamitic Longhorn) show that such cattle from French Guinea are resistant to strains of protozoa in the Gold Coast and its hinterland. I repeat that I have used the term West African Shorthorn to describe the unhumped cattle of West Africa generally in the same sense that the term Shorthorn is used of a famous British breed and the term is no more synonymous with the true Brachyceros type of West Africa than the



White Fulani Bull.
(Mixture of Zebu and Hamitic Longhorn.)



N'Dama Bull (Hamitic Longhorn).

British Shorthorn is synonymous with the Celtic ox. For ordinary use, a general term to describe the unhumped cattle as opposed to the zebu was necessary but it must not be used in a generic sense.

A great drawback to the Brachyceros cattle is their susceptibility to rinderpest. In natural outbreaks, the mortality is seldom less than 90 per cent. In immunisation work, the dosage of anti-rinderpest serum which has to be given is very large. A small Shorthorn requires three or four times the dose of a large zebu. So great is their susceptibility that at one time it was believed in Nigeria that they were too susceptible to immunise successfully but this was disproved in the Gold Coast.

The Zebu.—The term zebu is broadly applied to humped cattle. However, there are zebu cattle without humps and in crossing with other breeds of cattle, the hump is the first character to be bred out, which tends to the idea that the hump is the latest acquired addition to the anatomy of the zebu. The earliest zebus shown in Egyptian drawings appear to possess rather a marked rise of the withers than a true hump. The hump is a curious appendage. It is popularly supposed to store a reserve of fat against famine or food shortage but this does not appear to be the case. The hump varies in its position with different types of cattle.

The zebu is descended from Bos Namadicus, the Asiatic urus. The West African zebu, however, like the unhumped cattle, is seldom found pure but is usually mixed with either Hamitic Longhorn or Brachyceros blood. According to Curson and Epstein, there are three types of humped cattle in West Africa:—

(*a*) *The Shorthorned Zebu.*—The result of intermingling the zebu with Brachyceros blood. The Sudanese cattle are of this type and many other West African humped cattle can be classified thus.

(*b*) *The Sanga.*—An intermixture of the true zebu and the Hamitic Longhorn. The hump is small and is well forward in the cervico-thoracic region. This type is found in Nigeria around Lake Chad. The Sanga is uncommon in other parts of West Africa though the crosses between humped and unhumped cattle in the Gold Coast resemble closely the cattle described by Curson and Epstein as Sangas.

(*c*) *The Lyre-horned Zebu of West Africa* arose as the result of a cross between Hamitic Longhorn and the Shorthorn zebu. This type of zebu is very common, particularly in the Niger bend, from whence most of the imported humped cattle come to the Gold Coast markets. The White Fulani of Nigeria belongs to this group. These zebus are hardy and have a better resistance to trypanosomiasis than other types, probably because of their Hamitic Longhorn blood. However, there are types of zebu cattle which it is difficult to place in these three groups but as this article concerns mainly the cattle of the Gold Coast, this matter is not of immediate importance here. The zebu cattle, which are being used to cross with Gold Coast unhumped cattle are either of group (*a*) or (*c*). The half-bred zebu cattle, occurring as the result of crossing zebus and West African Shorthorn cattle might be classified Sanga as they possess a muscular cervico-thoracic protuberance and variable horns. A common type of West African zebu is one which has horns sloping upwards and outwards in precisely the manner of its original ancestor, Bos Namadicus, the Asiatic urus. The arrangement of the horns is different from what Curson and Epstein call the lateral-horned zebu, with the Afrikander as its type specimen. The horns are oval in cross section. There is also a Roman-nosed lateral-horned zebu common in West Africa; this animal is very wild and of poor conformation. The type is seen in all mobs of trade cattle and appears to be exceedingly susceptible to protozoal disease.

The influence of the zebu on the unhumped cattle of the Gold Coast is under-estimated. The size of the cattle in the Northern areas is due to a goodly proportion of zebu blood. The casual observer imagines that, because an animal is unhumped, he has no zebu in his composition. Even a three-quarter-bred zebu has little or no hump. It is safe to say that there are few cattle anywhere in the Gold Coast which have not zebu blood in their genetical constitution. It has previously been noted that superficially the Brachyceros points appear dominant.

In addition to the hump, marked zebu characteristics are the voice, with its roaring bellow as contrasted with the lowing of other cattle, and the large dewlap which usually commences just under the chin and the lower tail-head.

From a veterinary point of view, the comparative resistance to rinderpest is a good feature as casualties in anti-rinderpest immunisation are uncommon and results benign. The zebu is less resistant to trypanosomiasis than the other two great breeds of cattle but has a certain resistance and can exist and thrive in areas with a light tsetse infestation.

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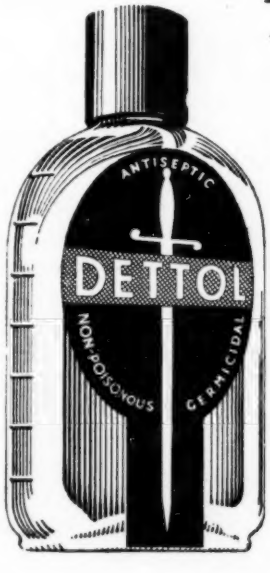

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LDPV/4

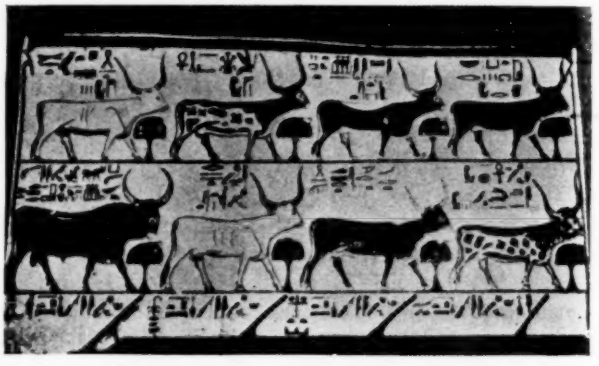
Many zebu crosses are as resistant to their local strains of trypanosomes as are unhumped cattle. The Borgou cattle of Dahomey constitute a case in point. In Nigeria, good cross zebu cattle exist in parts of Ilorin district, which is heavily infested with fly.

Modern Gold Coast Cattle.—With the possible exception of a negligible number of small scattered herds, the modern cattle of the Gold Coast are a mixture of Hamitic Longhorn, Brachyceros (Shorthorn) cattle and zebu and can conveniently be named West African Shorthorn, with the exception of variations such as the N'Dama, which breed true. What Cadwallader Bates said of the British Shorthorn, that it is "to a great extent, a Bos compositus" can be said of the West African Shorthorn. The latter cattle are descended from every kind which has come to the part of West Africa south of latitude 14°. Colours and colour patterns vary like those of a menagerie. The genetical composition of the Gold Coast cattle at present is similar to that of English cattle before Bakewell's time and just as the name Longhorn was given to these cattle because most of them had long wavy horns so has the name Shorthorn been given to the unhumped cattle of West Africa because most of them have short horns. Prior to this standard name, cattle were known by the name of the tribal district they inhabited so that anyone from the Gold Coast who heard French subjects talking about Baoule or Borgou cattle had little idea what was meant. Just as the numbers of British breeds increased when genetical points were fixed and cattle began to breed to definite types through selection so will the same phenomenon occur in West Africa when types of West African Shorthorn cattle are artificially selected and bred for distinct points, colours or conformation. The Fulani have fixed several varieties of humped cattle by selection but this has not been done purposively among the unhumped cattle, whose owners must be among the least-informed stock-owners of the world. Stock-breeding in the Gold Coast is at the stage where practically no owners understand that a good mature male is necessary for the production of good young animals and where mating is left purely to chance. Laymen are apt to confuse the creation and establishment of a breed type of cattle beast, which eventually produces animals which exhibit certain points, such as of coloration, and continues to do so generation after generation, with the original basic ancestor breeds such as the Hamitic Longhorn. That this is not so can be understood when it is realised that such a breed as the Aberdeen-Angus, an all black, polled ox with typical conformation, is one of the most composite breeds in existence, being composed of selections from at least half a dozen earlier breeds and races. The belief that the development of Gold Coast cattle should be solely by the Brachyceros variety of cattle is a direct contradiction of the methods of improvers throughout the world. Just as the Celtic ox of Britain proved firstly too small for draught and then too small for the markets, so has the West African Shorthorn ox which has an undue proportion of Brachyceros blood in his make-up shown himself too minute for such purposes in this country. Save for a few owners in the extreme north-east of the Northern Territories and around Accra, there is no attempt at cattle improvement by private owners. The degree of admixture of the three main breeds is determined by environment and protozoal disease, the chief of which is trypanosomiasis. The zebu is the most susceptible to trypanosomiasis and cannot be bred pure under ordinary conditions, except in selected small areas. Thus the greater the tsetse infestation of an area, the higher the trypanosomiasis infection and the less zebu blood in the cattle. There are nearly 200,000 cattle in the Gold Coast, of which there are 160,000 in the Northern Territories and nearly 40,000 head in the plains of the Eastern Province of the Colony and a few scattered herds elsewhere. The best cattle are in the north-east of the Northern Territories round Bawku, Zuarungu and Navrongo and in Dagomba round Tamale, and number about 100,000. These cattle are a mixture of Hamitic Longhorn and Brachyceros with additional zebu blood. All are unhumped but in nearly every animal can visible zebu points be found. The zebu, though susceptible to trypanosomiasis and other local diseases, is much more resistant to rinderpest and is a good traveller, a great point under dry weather conditions in West Africa. Though a heavy admixture of zebu results in what to the average European is sometimes a change for the worse as regards conformation, it does cause increased size and weight and the more zebu a cattle beast is, the more popular with the African and the better the market price at Prang and other centres. Meat is sold in the markets by weight; there is no discrimination into quality and no "beefsteak convention" as prevails in England, which inflates the price of certain parts of the carcase out of proportion to the rest and causes the breeding of cattle with extra good development of the expensive parts of the anatomy. The large zebu has a great advantage economically and the larger the animal the better and *vice versa*. Thus the aim in cattle improvement in the Gold Coast is to increase primarily the size of the local bovine in order to increase the value of bullocks in the local markets. There is fortunately little likelihood of the adoption of the English beefsteak fetish with

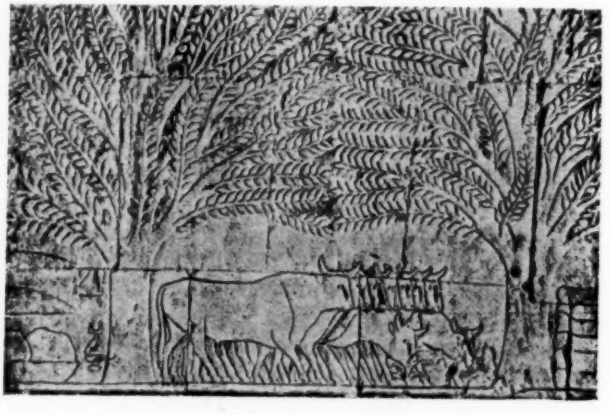
corresponding social degrees among the musculature of the bovine, varying from the aristocratic fillet steak to the plebeian "scrag end." This simplifies the work of the breeder of bullocks, who can plan in the knowledge that arbitrary fashions in different meat cuts are not likely to occur here and to cause changes in the type of market cattle required.

From an archaeological point of view, the most interesting cattle in the country are those which have reverted to or remained the true Brachyceros (Shorthorn). Bad environment, bad tending, heavy protozoal infection and inbreeding have caused the Brachyceros points to prevail, mainly because in these bad areas and under such conditions, only a small animal can survive. They are dwarfed and stunted and their measurements are identical with the old Celtic ox. The cattle are unthrifty and of no economic value in the markets. In Keta lagoon country, these little cattle are hired to owners of coconut plantations who tie them to trees for the purpose of producing manure. Such cattle are delicate and many of them are in a state of unstable equilibrium between life and death and are a nightmare to veterinary officers entrusted with the work of immunising them against rinderpest as the slightest misjudgment of dosage of serum, heavy rain during reaction or any abnormal feature are liable to cause heavy mortality among such amazing animals. In certain areas, the trypanosomiasis infection is such that no cattle can survive and in other bad parts, causes such poor cattle that they are of no practical use. All attempts so far have failed to establish herds of cattle on the Afram Plains. Some years ago, cattle from north-western Ashanti were established there and in spite of excellent grazing and water supplies, they gradually lost their resistance to trypanosomiasis which was broken by intense and continual infection from tsetse flies. Heavy mortality ensued and the herd was abandoned. The cattle were Brachyceros with a Hamitic Longhorn strain. From much experiment, the N'Dama appears to be the only cattle beast of West Africa which can usually stand up to infections of different strains of trypanosomes. Therefore, he appears the most suitable bovine for improvement work in tsetse areas and this is being taken advantage of not only in the Gold Coast but throughout French West Africa, where special farms have been established to breed this valuable animal.

It is well to stress the point that all resistance to trypanosomiasis is relative as far as cattle are concerned. If tsetse infestation and consequent trypanosomiasis rise above a certain standard, cattle cannot be bred or maintained. Trypanosomiasis is the limiting factor in cattle husbandry in West Africa. No ox is immune to trypanosomiasis; some are resistant but this



Hamitic Longhorn Cattle of Ancient Egypt.
(*From "The Accuracy of the Bible" by Yahuda.*)



Brachyceros Cattle of Ancient Egypt.
(*From "The Accuracy of the Bible" by Yahuda.*)

resistance can always be broken down, even in N'Damas, by adverse environment, bad conditions, increased trypanosomiasis infection, etc. Many cattle have a high degree of resistance to the local strains of trypanosomes but little or none to strains of the same species of parasite in other parts of the country, even a few miles distant.

The Gold Coast and Ashanti are terribly short of fresh meat. There is an abundant demand and a poor supply. Meat is expensive, the average being 1s. 6d. per lb. as against 4d. in Lagos and 2d. in Kano. No other British dominion or colony imports so much tinned or preserved meat. The Northern Territories and the Eastern Province plains have at present 200,000 head of cattle, a proportion of which are too small and unsuitable for the markets. The cattle can be increased five times and the weight can be raised to a decent marketable standard. Experimental work at the main Government farm has demonstrated what are the best types of improved cattle to use as sires and these results have been tried out in exhaustive field experiments. Proved success has resulted from the use of N'Dama (Hamitic Longhorn) bulls and Sudanese and White Fulani zebus, though the latter crosses are too

susceptible to trypanosomiasis for some parts of the country. The immediate aim is to increase the weight of the West African Shorthorn bullock from four or five hundredweight to seven, and this is succeeding. The breeding of beef cattle is the one certain successful economic product of the Northern Territories because there is great demand and there are no transport charges as the cattle walk to the southern markets. By means of Native Administration farms in the Northern Territories and co-operative farms in the Eastern Province, the paucity of good bulls will be solved and every cow will be served by a decent bull. The solution of the beef problem is the existence in the Gold Coast of a million local cattle of marketable quality and this is well within its capabilities. The anti-rinderpest immunisation scheme, by eliminating that disease, has doubled the cattle in five years so that this aim is likely to succeed.

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RAT VIRUS ENQUIRY

It is stated in the report for 1936 of the Institute for Medical Research, Kuala Lumpur, that in 1935 a grant was made by the Palm Oil Producers' Association, of Malaya, towards the cost of an investigation of rat viruses at the Institute. It was consequently possible to appoint Dr. J. T. Paranjothy, who is now engaged on researches in this connection. For the first three months after appointment, he studied experimental methods applied to rats and collected extracts from the literature on rats and rat viruses. From June onwards herd experiments were conducted on rats with *Salmonella enteritidis* Gaertner, *Pasteurella aviseptica* and *Pasteurella cuniculiseptica.* Experiments were also undertaken with the virus of infectious ectromelia of mice which, though definitely pathogenic to local mice, was found to be avirulent for *R.r. jalorensis*—a prevalent species on oil palm estates. The virus was obtained through the courtesy of Dr. P. P. Laidlaw from the National Institute for Medical Research, Hampstead. Careful autopsies have been conducted on a number of dead rats in order to obtain data of the local rat diseases. A biological survey of local rats is also under way and, as an auxiliary to other methods of rat destruction, experiments with the more modern types of rat traps have been undertaken. Although fairly good results were obtained in a large compartment containing captured rats, the catches were very disappointing when the traps were installed on an oil palm plantation.

The Agglutination Test for the Diagnosis of Epizootic Abortion*

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In the June, 1937, issue of the *Journal of Comparative Pathology and Therapeutics* (Vol. 50, page 149), editorial comment was made on a report which the writer had been invited to contribute to the 1936 meeting of the Committee of the International Office of Epizoötics and which was entitled "L'épreuve de l'agglutination pour la diagnostic de l'avortement épizootique des bovins. Comparison des suspensions bactériennes, des méthodes et des critères de diagnostique utilisés dans divers pays." (Bull. de l'Office International des Epizooties, 1936, Vol. 12, page 107.) The editorial comments concerned reveal a misconception of the main purpose of the paper and of many of the statements made. A reply is therefore necessary.

The important points of the editorial comment appear to concern (1) the object of the article; (2) a particular herd which was cited as an example of the occasional failure of the test, the date of the observations in that herd and the writer's views regarding the agglutination test in herds in general; (3) the value of dried serum as a standard and the value of a comparison of various test methods; (4) the significance to be attached to a reaction at a titre of 1 : 10.

(1) It is necessary to restate that the writer's main object [quoted by the editor in his review (*loc. cit.*, p. 144)] was "To compare the suspensions, methods and diagnostic criteria employed by various workers and in different countries for the agglutination test for the eradication of epizoötic abortion," and that he was not, as suggested, "moved to write this article because he failed to use the agglutination test with success in an endeavour to eradicate abortion from a particular herd."

(2) The details of this particular herd were given at the end of the article in order to provoke discussion at a meeting where representatives of most European and many other countries were present. Neither the inclusion of this herd nor the article as a whole could be taken to imply that the writer thought "the test ought to be discarded." On the contrary, as originally stated, "the number of herds in which the eradication plan has not given favourable results is not great; in the majority of cases the results have been eminently satisfactory." That the herd cited was a milking herd is not (as stated by the editor) a reason *per se* that success could not be expected. The results reported in the literature, in particular from American sources, and also the writer's own experience go to show that the eradication of the disease from a milking herd is practicable provided that conditions are otherwise suitable. As stated in the original article (p. 138), separation of reactors and non-reactors was complete in the herd cited, and other conditions, *e.g.*, the regular use of calving boxes for all animals, general lay-out and supervision were such as to make it likely that the eradication plan would be successful. The statement that "milkers washed their hands between cows," on which adverse comment is passed by the editor in his penultimate paragraph, refers to the non-reacting section of the herd. The conditions and the manner of failure of the test in this herd (*see* original article, pp. 138-142) were such as to warrant emphasis.

The observations on the herd in question were made from 1933 to 1936 at the Research Institute of the Royal Veterinary College. It is unfortunate, and it would seem the only justification for the tone of the editorial statements (paras. 4 and 5), that the date 1933 was misprinted 1923. This error arose from reasons beyond the writer's control, because the report was published before he was able to correct it. It was corrected in the reprints. However, since it was stated on p. 109 of the original article, in the description of methods and criteria, that tests were normally carried out at three-monthly intervals, and on p. 139 that the seventh test of the herd concerned was made in July, 1935, it might reasonably have been suspected that there was an error in printing and some attempt to verify the date might have been expected.

(3) What the editor describes as "manipulations with the suspensions of abortion bacilli from five different countries" (actually the current methods of six countries in addition to our own were compared) formed the basis of the main part of the article. It was shown that no two of the methods were alike, that the titres obtained with a given serum varied greatly, and finally that, taking into consideration the diagnostic criteria normally used with each suspension, the test as carried out in some laboratories was five times as sensitive as in others. For example, in Germany (State Scheme) the antibody content of the serum had to be five times as high as in the United States (State Scheme) or as in Austria before an animal was classed as positive or doubtful, respectively. In order that workers in one country may make use of the observations reported elsewhere, it is essential that they should know the real meaning of the titres regarded as positive, doubtful or negative

*See letter in correspondence column p. 1313.

in the laboratory from which the data come. The necessary data for even an approximate evaluation are often not given. Yet it is to this part of the paper that the editor comments, "well-informed readers will pay no attention." He continues, "They will also ignore the suggestion that desiccated serum is necessary in the agglutination test," etc. It was not suggested that "desiccated serum is necessary in the agglutination test." What was stated, on p. 108 of the article concerned, was that our suspensions were standardised to give 25 per cent. agglutination at a 1 : 480 dilution of the dried standard serum and, later, that such a desiccated serum provided a permanent measure for the standardisation of test suspensions. It is now out of date, to say the least, to suggest that the use of a dried serum as a standard "borders on the nonsensical." Dried antiserum standards are now being used widely, on an international basis, for the standardisation and assay of numerous antitoxins and antisera. Ten such dried serum standards have already been established and accepted for international use.

(4) No evidence is brought forward in any part of the editor's comments to support his statements in para. 7. The succeeding paragraphs certainly do not do so and are, in fact, contradictory. In para. 8 it is stated that 1 : 10 is the titre of normal bovine animals, whilst in para. 9 it is clearly implied that it is not. The fact is that with a suspension of a certain agglutinability, *e.g.*, the one described by the writer (*Journal of Comparative Pathology and Therapeutics*, Vol. 49, p. 251), a definite reaction at 1 : 10 may or may not mean that the animal is likely to be a source of spread in the near future. There is, therefore, adequate reason in the early stages of an eradication scheme and whenever the animal's previous test history is unknown for retesting all such animals, if pregnant, at shorter intervals than the normal three months (*see* original article, pp. 109, 110).

The unqualified statement of the editor that "1 : 10 is the titre of normal bovine animals" cannot for another reason be accepted as sufficient; because a serum which gives a titre of 1 : 10 by one method gives a titre of, say, 1 : 50, by other current methods (*see* original article).

In conclusion, it is not out of place to recall that as a result of the article in question two workers from other countries, Dr. R. Willems (Brussels) and Professor W. Frei (Zürich), were appointed to report on the matter this year, that they have confirmed or accepted the truth of the matters in question, that they have put forward suggestions that the dried abortus serum described (*Journal of Comparative Pathology and Therapeutics*, Vol. 49, p. 251) should be taken as an international standard, that a method of testing, similar in all essential respects to the one there described, should be used, and finally that, in order to make comparison of results easy, all suspensions should be given a numerical value indicating their relative agglutinability in terms of the dried standard serum.

COST AND INCIDENCE OF "SCHEDULED" DISEASES OF ANIMALS

In its "Report of Proceedings under the Diseases of Animals Acts for the Year 1936" (Stationery Office, 1s. 6d.), and which will be fully reviewed in our columns in due course, the Ministry of Agriculture states that there were 67 outbreaks of foot-and-mouth disease in this country last year, and all but four of these occurred during the last four months of the year. In England there were 60 outbreaks, and the worst month was December, when 29 cases occurred. The other seven outbreaks were in Wales, Scotland being free from the disease throughout the year. The numbers of animals slaughtered were 2,504 cattle, 1,737 sheep, and 1,072 pigs, and the total amount paid in compensation was approximately £52,480.

With regard to bovine tuberculosis, disease was reported to exist on 26,744 premises, and after examination by veterinary inspectors of the local authorities 23,802 animals (on 22,142 premises) were ordered to be slaughtered. This was an increase of nearly 1,500 on the previous year. The cost in compensation paid by local authorities to owners of the slaughtered cattle reached £100,342, a higher sum than in any of the four previous years. Local authorities are entitled by the Diseases of Animals Act, 1925, to claim from the Ministry a refund of 75 per cent. of the gross amount of compensation paid by them under the Tuberculosis Order. The amount due to be refunded to local authorities in respect of 1936 was £75,256 as compared with £64,370 in the previous year. Against the remaining 25 per cent. (£25,086) the local authorities received a sum of £19,952 from the salvage of the carcases of slaughtered animals.

The report adds that the progress of the Attested Herds Scheme, which during 1935 had been disappointing, continued to be slow, though fairly steady during the first ten months of 1936, and the number of herds on the register of Attested Herds rose slowly from 55, at which it stood at the beginning of the year, to 140 on October 31st. The remaining two months of the year showed a more rapid advance, a further 53 herds being added to bring the total on the register at the end of the year to 192. (A good rate of progress was maintained during the first quarter of 1937, during which 58 further herds qualified for admission to the register.)

In the case of sheep scab, considerable further progress was made in the process of eradication, the total figures for 1936 being 255, or a decline of 222 outbreaks (46·5 per cent.) as compared with 1935. This figure is the lowest recorded for 32 years, and the third lowest on record since 1870. Of 1,873 outbreaks of swine fever last year, 1,654 occurred in England. This was a decrease of 236 on the year before, but Scotland suffered from 47 more outbreaks than in 1935, and Wales from 13 more.

The Veterinary Record

October 9th, 1937.

The Veterinarian and Animal Husbandry Problems within the Empire

MR. Smith treats the subject of his comprehensive survey published in our last issue under two main headings, namely, first the combating of animal diseases, and secondly, the improvement of stock. The subject, to his mind, is so diversified in the demands it makes upon the services of specialists in the various branches of modern science for its proper study and so immense in its politico-economical bearings that the organised resources of State departments need to be wisely expended to secure the collaboration of all those best fitted to pursue the tasks to be undertaken in its solution. Yet, with all the calls that the subject makes for particular treatment of its component issues, he envisages it as a single one. All the issues are such, we gather, in the circumstances of the territories he deals with, that they can only be given direction and brought under fruitful control by the competent veterinarian. This view applies no less to those issues which fall under the heading animal husbandry than to those with which the veterinarian has concerned himself mainly in the past, namely, those of disease.

Mr. Smith's views have naturally been determined largely by his long experience in one territory, Northern Rhodesia, and before we discuss them further, with all the respect they command in so far as they may reflect upon our adequacy to compete with the whole subject portrayed in his survey, it is well to search for any other authoritative pronouncements that can give us guidance upon it. The state of affairs in the Dominions, or generally in what may be termed those large tracts of Empire situated within the temperate zone where climatic and other conditions have favoured the settlement of a large European population and the raising of those breeds of livestock that had already been developed to a high state of productivity in the home country, has been excluded from Mr. Smith's survey. The survey deals with those territories situated within tropical or sub-tropical zones wherein the environment does not lend itself readily to the permanent implantation of a human or livestock population evolved in temperate climates. The subject of the survey may therefore be termed, more for convenience in denoting the radically different emphasis brought to bear upon some aspects of the veterinarian's pursuit by the environment than any fundamental difference in the pursuit itself, tropical veterinary science. Hence, the survey may be legitimately extended in its scope to comprise conditions as they occur in all territories within the tropical and sub-tropical zones: these include the non-self-governing dependencies, mandated territories, and India.

Happily, for our guidance, there have been published within the last few years two State documents which deal with the subject in a thorough and penetrating manner. On comparing the carefully sifted evidence presented in them with the views expressed by Mr. Smith, we may say at once that they unfold essentially the same story—fascinating and alluring in the prospects it presents for the exercise of his calling to the enthusiastic veterinarian on the one hand, and in many ways unedifying and distressing on the other hand when we contemplate its magnitude, the apathy and neglect of officialdom, the state into which livestock problems have been allowed to deteriorate, with consequent deplorable condition and gross overstocking of cattle, terrible diseases that can be, and ought to be, eradicated, the prejudices and ignorance of stockowners, the vast problems in research that ought to have been taken properly in hand long ago, and the difficulties which have beset too often the few pioneers who have resolutely attacked in their capacity as trained veterinarians the most pressing problems.

The two documents we have in mind are the Report of the Royal Commission on Agriculture in India (1928), under the chairmanship of Lord Linlithgow, the present Viceroy of India, and the Report of a committee upon the Colonial Veterinary Service appointed by the Secretary of State for the Colonies (1929), under the chairmanship of the late Lord Lovat. We need not pause here to reflect upon the terms in which the Prain Committee (1922) appointed by the Development Commissioners to enquire into the state of research upon animal diseases dismissed the subject of their enquiry so far as it was undertaken in these overseas possessions, which in relation to the opportunities available they agreed was "lamentable." We shall revert again to a consideration of the evidence presented in the Linlithgow and Lovat Reports.

CLINICAL COMMUNICATION

Posterior Paralysis in Swine

H. E. BYWATER and J. T. TURNEY

The subjects were two pedigree large white sows, Ramsey Reine 45th and Ramsey Belle 159th, kept at a farm attached to a mental hospital. They were half-sisters, having the same sire, Creek Banner 14th, but coming of two different and unrelated sows. Both had been served by the same boar, Stockbridge Wonderful Boy 2nd. Their food consisted of weatings, bran, flaked maize and fish meal (5 per cent.). Green food and exercise were given daily. The first sow (Ramsey Belle) was 14 months old when she farrowed on June 1st, having a litter consisting of five boars, two gilts and one dead foetus. On July 13th she was noted to be unsteady on her hind legs and the young pigs, which had made very good progress, were weaned. Professional attendance was summoned next day. She moved with difficulty, there being inco-ordination of movement. Her appearance was bright; there was complete absence of milk and very slight constipation, but her appetite was unimpaired. A form of milk fever was tentatively diagnosed and an injection of boro-gluconate (2½ oz. in 10 oz. of water) was given subcutaneously into the region at the back of the elbow. An electuary of magnesium sulphate and treacle was administered and calcium dextrose was prescribed in the food morning and evening.

Next day paralysis of both hind limbs had set in and the animal was unable to move except by pushing herself around in circles whilst on her side. Upon manipulation of the hind limbs considerable pain was evidenced and hypersensitivity was present as indicated by pricking with a pin. At the time of this visit the second case was noticed. This sow (Ramsey Reine) was 13 months old when she farrowed on May 21st having a litter of five boars and six gilts, one of which died later. When seen on July 15th she was slightly unsteady on the hind legs and her appetite was only fair. The sucklings were removed and she was given boro-gluconate subcutaneously. The same evening she declined to take her food. Powders containing pulv. gent. radix. 1 drachm, pulv. zinzib. 1 drachm, pulv. soda bicarb. 1 drachm and pulv. glycyrrhizae radix 1 drachm, were prescribed. Calcium dextrose powder was given as in the case of the first sow.

July 16th.—Ramsey Reine was about the same and lay quiet, except when disturbed, but was unable to rise.

Ramsey Belle was much worse, being subconscious and having lost all use of her hind limbs. She showed signs of sensation in the limbs, however, when pricked with a pin. It was decided to inject calcium boro-gluconate as before.

July 17th.—Ramsey Belle had bed sores on the carpus and hock owing to working herself about a little in circles whilst on her side. She had to be turned over by the attendants and given a thick bedding of straw. Liq. strych., m. 10., was given subcutaneously.

Ramsey Reine seemed about the same and as no motions were being passed an electuary of mag. sulph. and zinzib. was administered. The animal, however, had great difficulty in swallowing and seemed unable to use its tongue at all.

July 18th.—Another injection of liq. strych. was given to Ramsey Belle and she seemed to have improved slightly. She grunted contentedly when anyone entered the sty, and took her food when helped. She showed signs of pain, however, when assisted to rise and was unable to walk. Ramsey Reine was still incapable of taking food. Another injection of calcium boro-gluconate was given to her.

July 19th.—Ramsey Belle was still down and unable to rise. The limbs were retracted when forcibly abducted or pricked. Liq. strych. given subcutaneously. Ramsey Reine was still about the same and was given another injection of boro-gluconate.

July 21st.—Ramsey Belle seemed brighter and was given another injection of liq. strych. Ramsey Reine passed some faeces and a small amount of urine but paralysis was still noticed about the mouth and throat. Calcium boro-gluconate given subcutaneously. She died during the following night (July 22-23rd).

Post-mortem Examination.—The stomach was full of food although none had been taken since July 15th (eight days). The bowels contained a normal amount of fluid and ingesta whilst faeces were present in the colon. The bladder was empty—urine having been passed in the sty. There was slight calcification of the myocardium and a calcified tuberculous lesion, about the size of a pea, in one of the mesenteric lymphatic glands. There were signs of paralysis of the throat; electuary, etc., was found in the pharyngeal region but the oesophagus was empty and none had reached the stomach. It is regretted that owing to rapid decomposition it was found impracticable to make microscopical examinations of the nerves which, however, as far as one could see, were normal macroscopically.

July 23rd.—Ramsey Belle was able to sit up but could not rise without assistance and still showed signs of pain. Glucose D was prescribed morning and evening.

July 28th.—She could now rise with assistance but was very unsteady on the hind limbs.

August 4th.—Upon making the sow move around the sty a marked "stringhalt" movement was observed in the right hind limb and the inner surface of the left thigh was rubbed badly by the right foot. Any attempt to hurry the sow caused her to stumble. Massage of the off hind limb with liniment was ordered.

August 11th.—The peculiar movement of the hind limb still existed but the sow showed general improvement. Powders consisting of pulv. mag. sulph. 1½ drachms, pulv. pot. bicarb. 1 drachm, pulv. soda. salicyl. ½ drachm, pulv. nucis vom. gr. 15, were given once daily.

August 18th.—The action of the limb was less exaggerated and unaffected by exercise.

August 25th.—The peculiar action was still noticeable. Powders of pot. iodid. 1 drachm, ammon. chlor. 1 drachm and zinzib. 1 drachm, were prescribed once daily.

September 1st.—The sow appeared to have made an almost complete recovery. There was some lack of freedom of action in the hind limbs and slightly more weight appeared to be carried by the near side limb. A hardly perceptible atrophy to the muscles of the gluteal region of the off hind limb was detected on careful comparison with the opposite leg.

All other pigs on the farm are perfectly healthy, save one sow with dislocation of the patella following an accident. These cases are recorded owing to the similarity of symptoms observed to those contained in an abstract under the same heading in the *Veterinary Record* of July 17th, 1937, p. 890.

THE WELSH COB THREATENED WITH EXTINCTION

The Welsh cob, once a very popular type of horse, is threatened with extinction, and unless immediate steps are taken the breed with die out. "The Aberystwyth Horse Show Society, which is interesting itself in the matter, is organising a movement to encourage breeding from the very few horses that remain," says the local correspondent of *The Times*, and adds: "Mr. Moses Griffith, who is in charge of the Carn Hill improvement scheme at Devil's Bridge for the Ministry of Agriculture, speaking at the Society's dinner, said that Cardiganshire had always been noted for its breed of cobs, and Welsh people were the biggest culprits in helping to destroy the cob by crossing it with the hackney type. It was the best breed of dual-purpose horse obtainable; it had plenty of shoulder and big bone. He suggested that attention should be given by the Society to the matter.

"Mr. Parry, veterinary surgeon, Aberystwyth, held similar views, and said that the Welsh cob was crossed with the hackney to improve speed, but the motor car was now able to give the farmer all the speed he required. Cardiganshire was the home of the Welsh cob; they were first bred on the hills of Penuwch. He urged the Society to make some effort to restore the genuine type, although it was nearly too late.

"The Society decided to take action."

ABSTRACTS

[Studies on Bovine Mastitis. XII.—Mastitis due to Staphylococci. Minett, F. C. (1937.) *J. Comp. Path. & Therap.* **50.** 101-121.]

A review is given of the literature on the subject.

In the cow, mastitis due to pathogenic staphylococci can exist in several clinical forms. The best known, although not very common, is an acute type in which gangrenous changes supervene; other organisms besides staphylococci may, however, be responsible for this kind of udder lesion. A second variety, again not very common—in this country at least—is that in which "botriomycotic" lesions are formed in the udder. The third and at the same time most prevalent kind has not been given wide recognition in the literature, partly because it is overshadowed in importance by the clinically not dissimilar streptococcus mastitis. In this third form the changes produced in the gland are chronic in nature, but not suppurative in the ordinary sense. The ultimate reaction affects the connective tissue framework of the gland so that its substance becomes indurated. In consequence of this, there is some decrease in milk yield accompanied by qualitative changes in the milk, such as excessive alkalinity, increase in the numbers of leucocytes, lowered specific gravity and solids-not-fat content.

In this article an account is given of ten acute cases of staphylococcus mastitis; nine of these showed gangrenous changes in one or two quarters and five of them died. Most of the cases were in older cows, but two fatal cases occurred in first-calvers and, it is important to note, one of these had calved only 24 hours before the onset of symptoms. In one instance, a violent *Corynebacterium pyogenes* infection was superimposed on the staphylococcus mastitis, suggesting that in the pathogenesis of some udder infections an association between different bacterial species may be important.

In order to investigate more closely the common form of the disease referred to above, five affected cows were kept at the Institute, and a series of detailed observations—clinical, biological, chemical and histological—was made on three of them. These observations illustrated in a general way the effects upon the udder and the milk, as mentioned above. Contrary to what is sometimes the case with streptococcus mastitis, with staphylococcus infections the appearance of the milk is not as a rule grossly altered, though the induration in the gland may be of such a character as to suggest the existence of a tuberculous infection. The milk, however, is liable to show a slightly increased deposit when centrifuged, and films

of the cream which rises by gravity show an excess of neutrophil leucocytes.

The importance of staphylococcus mastitis arises in part from the possibility that, unless a proper bacteriological examination is made, the disease may be confused with the more serious streptococcus form. The only certain method, then, of deciding upon the nature of the changes present is to make a bacteriological examination, and in the present work attention was given to the technique required for this purpose. As is well known, staphylococci of a harmless kind are very common inhabitants of the cow's udder and these have to be distinguished from pathogenic staphylococci — to which the name *Staph. aureus* may be applied. Although on a solid medium the colonies of saprophytic staphylococci are often frankly white or yellow, whereas those of *Staph. aureus* are light fawn or golden, distinctions based on colour differences cannot always be depended upon. For this reason, a plain agar medium is not sufficiently differential, and the same remark is true of agar containing horse blood, because horse corpuscles are relatively insusceptible to the toxins (lysins) of *Staph. aureus*. Agar containing 5·0 per cent. defibrinated ox- or sheep-blood, however, is suitable, because on this medium udder strains of *Staph. aureus* grow in the form of pale fawn colonies resting on a clear zone which is surrounded by a broad area of altered blood pigment. This appearance is characteristic and most helpful for diagnosis and it is due to the action of the α and β toxins of the organism on the red blood cells. Saprophytic staphylococci, on the other hand, are incapable of forming toxins and there are still other differential characteristics. A point of some importance is that the blood used shall be from young animals and so contain little or no natural staphylococcus antitoxin to inhibit lysis.

When milk samples from different cows are plated in ox- or sheep-blood agar, it becomes evident that *Staph. aureus* is a very widespread inhabitant of the udder, and in the absence of other discoverable pathogens one can with reason regard it as responsible for such a common minor abnormality as excessive leucocyte content in the milk. The numbers of staphylococci present in the milk of an infected quarter were found to vary considerably from time to time, while for their detection gravity cream is the best material for plating.

F. C. M.

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[Tuberculosis in Young Calves: Routes of Infection. Nieberle. (1937.) *Arch. f. Tierhlk.* **71.** 5.]

This series of papers deals with some of the work carried out by Nieberle, with the support of the German Government, on the pathogenesis of tuberculosis in animals. It forms a small part of a very extensive study, much of which has already appeared in various journals during recent years.

In one experiment, five three-weeks-old calves, which were negative to the tuberculin test, were given varying amounts of a culture of tubercle bacilli in milk. The animals were killed 18 to 38 days later, all having given a positive reaction to the tuberculin test. In four of the calves there was tuberculosis of the tonsils and retropharyngeal lymph glands; in the fifth animal the tonsils alone were affected, and here there was, in addition, a tuberculous bronchitis and bronchopneumonia. The portal lymph glands were free of tuberculosis, whereas the mesenteric glands were tuberculous in the animals killed 32 and 38 days after feeding. Nieberle concludes that if one finds tuberculosis of the portal lymph glands only, in a young calf, it is evidence of congenital placental infection, since feeding does not produce isolated lesions at this site, although this has been suggested by some workers.

The three remaining papers deal with the distribution and character of the lesions in 117 tuberculous calves between the ages of three and twelve weeks. These were found in a total of 20,670 calves and each tuberculous animal was carefully studied both macroscopically and microscopically. The primary tuberculous focus was found in the lung and mediastinal lymph gland in 46 animals, in the liver in 56 animals and in the intestine in 15 cases. Congenital infection giving rise to primary liver and portal gland lesions is thus the most common finding, followed by post-natal respiratory infection. Alimentary infection plays a less important rôle since tuberculous mastitis is considerably less common than "open" pulmonary tuberculosis.

An important finding was that calcification of tuberculous lesions may be found in three-weeks-old calves with primary tuberculosis of the lungs, *i.e.*, post-natal. At this stage the calcification is detectable only under the microscope, but at five to six weeks it is recognisable with the naked eye.

In primary tuberculosis arising by ingestion, it is very common to find lesions restricted to the mesenteric glands and no evidence of tuberculosis of the intestine. Further work is needed to decide whether the bacilli are able to penetrate the intestinal mucosa without leaving recognisable lesions or whether the changes produced undergo rapid healing. As a general rule, whenever the tubercle bacillus first enters the animal body it leaves a lesion in the organ of entry and in the associated lymph gland. This generalisation holds alike for man and for animals. [In order effectively to control tuberculosis, it is essential to understand how the

organisms get into the animal body, their effects on the tissues, and the route by which they are excreted. The work of Nieberle shows how much pathological anatomy can contribute towards the solution of these problems. If one can estimate accurately (by a study of the macroscopic and microscopic character of the lesions produced) the relative proportion of primary intestinal, pulmonary and congenital tuberculosis in young calves, then it is clearly possible to assess the importance of mammary, pulmonary and uterine tuberculosis in cows in transmitting the disease to young, healthy stock. The importance of bovine pulmonary tuberculosis is usually stressed, but insufficient attention is given to the incidence of udder and uterine disease, although these sources of infection may together account for as much as 60 per cent. of all tuberculous infection in young calves.]

E. G. W.

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[**I.—The Standardisation of Tuberculin for Use in Animal Practice.** Bull, L. B.

II.—The Application of the Tuberculin Test. Henry, M. (1936.) *Austral. Vet. J.* **12.** 5.]

I.—After a brief outline of some of the more recent studies on its nature, the author describes and compares various methods of standardising tuberculin, *viz.*, the lethal method introduced by Koch, the intradermal, the complement fixation and the precipitin methods. He concludes that tuberculin for subcutaneous use should be standardised by the lethal method, whilst that used for intradermal testing should be standardised by the intradermal method. He also suggests the use of ultrafiltration for the concentration of tuberculin.

II.—A consideration of the various methods of tuberculin testing and of the advantages and disadvantages of each.

A. R.

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[**The Significance of Suspicious Agglutination Reactions for Bang's Disease.** Fitch, C. P., Bishop, L. M., and Boyd, W. L. (1937.) *J. Amer. Vet. Med. Ass.* **91.** 1.]

Eighty-six cows, each of which had given several successive doubtful reactions to the agglutination test for contagious abortion, were studied during a period of years, nearly all of them being kept over at least one calving period. They were in contact with a number of pregnant and non-pregnant abortion-free heifers, being isolated only when due to calve and returned as soon as discharges had ceased. Periodical bacteriological examinations were made of milk, colostrum, placentas and any discharges.

Three animals became positive to the agglutination test during the course of the experiment and two of these aborted. All three gave definite indication of infection by the blood test in ample time to be removed from the herd before aborting. *Br. abortus* was isolated from the placenta and colostrum of these three, but not from any of the other doubtful animals. None of the controls showed signs of infection, though a few developed doubtful reactions to the agglutination test.

A. R.

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[**Bovine Brucellosis.** M'Fadyean, J. (1937.) *J. Comp. Path. & Therap.* **50.** 2.]

This article describes some early work on contagious abortion in cattle. The development of the agglutination test and its application in dealing with affected herds are discussed. Detailed histories are given of the successful eradication of the disease from three herds where there was a moderate rate of infection but facilities for complete isolation were available and the wholehearted co-operation of owners and workers was forthcoming. The histories emphasise many points of interest and importance in attempting to free a herd of this disease.

A. R.

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[**The Effect of Feeding Paradichlorobenzene-treated Corn to Swine.** Emmel, M. W., and Henley, W. W. (1937.) *J. Amer. Vet. Med. Ass.* **91.** 1. 59-63. (2 tables, 3 refs.)]

Paradichlorobenzene is used extensively as a fumigant for the destruction of the corn weevil. Previous reports by various authors have shown that the feeding of paradichlorobenzene-treated corn to domestic animals had no ill-effects on the animals themselves, but the chemical rendered the flesh distasteful and inedible, while the milk of cows and hens' eggs were tainted.

The authors give details of an experiment in which two groups of swine were fed for 15 and 28 days respectively on a ration containing 60 parts of "treated" corn, the animals then reverting to their normal diet. Whilst the pigs were receiving the treated corn their daily gain in weight was less than that of a control group of pigs.

The animals were slaughtered at intervals to determine their edibility. The length of time required for the meat to become edible after a 15-day period on "treated" corn was approximately 62 days; after a 28-day period, approximately 85 days. Cloudy swelling of the parenchymatous organs was observed at *post-mortem* examination in all the experimental pigs.

J. S. P.

REPORT

City of Stoke-on-Trent

ANNUAL REPORT OF THE VETERINARY OFFICER, FOR 1936

This is the first Annual Report of the veterinary officer (Mr. F. H. Manley, M.V.Sc., M.R.C.V.S.).

The report is divided into three parts:—

Part I.—Administration of abattoir, and meat and food inspection.

There are 48 (38 registered and ten licensed) private slaughterhouses and (it is inferred) one corporation abattoir in the city, and the total number of animals there slaughtered is given as 182,134. It would appear that 35,736 of these were killed at the corporation abattoir.

A statistical table is given showing the numbers of carcases and part-carcases condemned and the causes of condemnation, and a further table shows the amount of "Other Foods" surrendered. It is pointed out that of the total carcases and part-carcases condemned, 63·8 per cent. were affected with tuberculosis.

Certain essential improvements, such as an improved water supply and the fitting up of an isolation slaughterhouse, are being carried out at the existing abattoir. The present building does not fulfil modern requirements and the erection of an up-to-date abattoir is under consideration.

Part II.—Supervision of Milk Supplies.

A quarterly routine examination of dairy herds has been inaugurated and the total number of cows examined was 7,683 (this figure includes routine examination in the City and "Section 4" cases outside). Clinical examinations are assisted at times by the examination of samples of milk and sputa and occasionally by the application of the tuberculin test. The majority of the specimens are submitted to the county bacteriologist for examination.

Ninety-seven samples of milk from individual cows were examined, of which two were positive microscopically and nine biologically.

Three positive sputa were recorded.

A table is given showing the results of the biological sampling of milk produced in the City and that produced outside.

In 1936, 245 bulk samples were taken from City producers of which only six, or 2·45 per cent., contained tubercle bacilli. This is a very low percentage for city milks. In 1935, 193 samples were taken and the percentage of infected milks was 6·2; 15·24 per cent. of "country" milks were tuberculous.

There are no producers of "Tuberculin Tested" milk in the City although 21 "Accredited" producers are licensed.

Part III.—Diseases of Animals Acts and Orders.

Under the Tuberculosis Order, 61 cows were slaughtered and the ratio of "udders" to "other forms" was 22/39. Forty-eight cases were advanced and 13 not advanced.

Three suspected outbreaks of parasitic mange are recorded, one of which was confirmed; there were two outbreaks of swine fever. No cases of anthrax or sheep scab occurred, but the City was on one occasion included in a "foot-and-mouth disease affected area," though no disease occurred within the City.

One livestock market is regularly attended, through which passed 8,896 animals.

N.V.M.A. DIVISIONAL REPORT

Midland Counties V.M.A.*

MEETING AT NEWCASTLE-UNDER-LYME

Professor Wright's "Surgical Talk"

The quarterly meeting of the Midland Counties Veterinary Medical Association was held at Newcastle-under-Lyme on Friday, June 11th, 1937. The President, Mr. W. Trigger, first entertained the members to lunch, two of his guests being the Deputy-Mayor and the Town Clerk of Newcastle (Alderman John Bentley, J.P., and Mr. J. Griffiths).

The company also included Professor J. G. Wright, Messrs. W. H. Brooke, A. B. Fewings, H. Tudor Hughes, Jas. Martin, T. D. M. Martin, T. Thomson, L. C. Davidson, J. T. Allen, J. H. Hobson, H. Yeomans, S. Jennings, W. S. Burndred, C. K. Lomas, J. W. E. Budge, F. H. Manley, C. W. Mellard, W. Scott, T. W. Gold, H. W. Griffiths, L. C. Tipper and the Hon. Secretary (Mr. H. W. Dawes).

After lunch the King's health was drunk and the only other toast was that of the President, proposed in felicitous terms by Mr. Tipper. He said he welcomed the privilege as one of the oldest members of the Society, and as one who worked with the President's uncle, the late R. C. Trigger, an honoured and well-known member of the profession.

The President, in reply, said he was glad to know that his uncle was still remembered. He was looking forward to a successful year of office and with the help of their esteemed Secretary he hoped to ensure an attractive programme at each meeting.

The Deputy Mayor welcomed the Association to Newcastle, and said that he had arranged for the business meeting to be held in the Council Chamber.

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Business Meeting

Nominations and Elections.—At the business meeting, after the confirmation of the minutes of the previous meeting, the nomination of new members was invited.

The Hon. Secretary nominated Mr. W. G. Burndred, of Hanley, who used to be a member years ago, and whose presence that day was welcomed.

The following veterinary surgeons, duly nominated at the previous meeting, were now unanimously elected members of the Association: Lieut.-Colonel Mellard, D.S.O., Woore; Mr. H. Howie, Brierley Hill; Mr. B. Davis, Walsall; and Mr. J. W. Budge, Wolverhampton.

Council's Report.—The Council, which had met earlier in the day, recommended that the next quarterly meeting be held at Birmingham, and that arrangements be left in the hands of the President, the Hon. Secretary and Mr. DeVine for a series of demonstrations.

On the motion of Mr. Tipper this was agreed to.

The Late Colonel Marriott.—The Hon. Secretary mentioned that since the last meeting they had lost an old and valued member in Colonel Tom Marriott. His death, which was sudden, was lamented by all who knew him. Mr. Griffiths and himself made a point of attending the funeral, and he also sent a wreath in the name of the Association.

The company stood for two minutes in silence in tribute to Colonel Marriott's memory.

Mr. Leonard Heelis.—Reference was now made by the Hon. Secretary to the indisposition of Mr. L. W. Heelis, of Solihull, Mr. Dawes saying that it would be a gracious act to send him a message of sympathy and best wishes for his recovery. Mr. Heelis was popular with all who knew him, and nobody had a greater number of friends. He moved that this be done.

Mr. Jennings seconded, and the resolution, supported by Mr. Tudor Hughes, Mr. Martin and others, was carried.

President's Address

The President (Mr. W. Trigger) them gave his inaugural address, as follows:—

I deeply appreciate the honour you have conferred upon me in electing me as President of this Association for the ensuing year. When I consider, however, that many of the most prominent and eminent men in our profession have occupied this office, I must admit that I feel I have done very little to deserve such an honour, except that I have endeavoured to carry on, to the best of my ability, the traditions of an old-established practice in this district which was so worthily conducted by my uncle, the late R. C. Trigger, one of your Past-Presidents, and I feel that in electing me as your President this year, you are in a great measure paying tribute to his memory.

I have a great admiration for the veterinary surgeons of his day. They carried on their work under very different conditions from those in which we work to-day, and I would ask our younger members if they have ever considered the discomfort of attending cases, when practically the only means of transport was a two-wheeled gig, with little or no protection from the weather, the conventional vehicle for veterinary surgeons, doctors, and other professional men in those days.

And yet in these days of luxury, when we travel about in a glass case, so to speak, I fear that the inducements of country practice are in danger of being outweighed by the conditions offered by the many excellent whole-time appointments which are available to our younger entrants to-day, and I am afraid that country practice, on which the dairy farmer in particular relies, is gradually becoming in need of recruits. This is one aspect of our profession which has caused me a great deal of thought the last few years, and here I hasten to assure any whole-time official who may be present that no personal reflection is intended, but I think it would be a matter for regret if the cream of the profession were to be absorbed in one direction.

It is an added pleasure during my year of office to have the valuable guidance of my friend, Mr. Dawes. His father and my uncle had a life-long association.

I thank you all again and will endeavour to carry out my duties to your satisfaction.

"A Surgical Talk"

Professor John G. Wright, F.R.C.V.S., of the Royal Veterinary College, London, gave an address, entitled "A Surgical Talk."

Nembutal Anaesthesia in the Dog.—Professor Wright said that the first subject to which he wished to make reference was that of the technique of nembutal anaesthesia in the dog. His object for so doing was to answer certain discrediting remarks regarding it which had appeared in the professional press. He personally considered it to be by far the safest and most satisfactory general anaesthetic at our command for the dog. That was not an enthusiastic over-statement, but a conclusion based upon a very considerable experience in its use. In a thousand consecutive cases in his department there had only been one death attributable to the anaesthetic—that of a bitch, suffering from prolonged dystocia, which was almost moribund at the time of anaesthetisation: at the same time, he was prepared to class it as a death from anaesthesia. There was only one satisfactory way of administering the agent, and that was by slow intravenous injection. The Americans, who were the first to use the drug, employed the method of intraperitoneal injection and specified a dose of one-fifth of a grain per pound bodyweight. It was

soon realised that this method was not entirely satisfactory. Even in healthy animals one was bound to meet individual variations in susceptibility when all other things were equal. When one dealt with diseased animals it became impossible accurately to assess the increased susceptibility and thus the employment of any method of administration which relied upon the computation of a dose was fraught with danger. If he was asked which organ it was which was chiefly responsible for this, he would say the liver, and not the heart and kidneys as was generally supposed. It was possible when employing the slow intravenous method to assess fairly accurately the patient's state of health, and thus give a more reliable prognosis, by the amount of nembutal required to anaesthetise it. He mentioned a case with which he had dealt a week or so previously, in which the degree of toxaemia present was such that the animal only required half the normal dose to induce general anaesthesia, and yet had recovered from operation. He considered that such fine shades in depths of anaesthesia were not possible with any of the other general anaesthetics at our command. In healthy animals he had found that whilst the original dose of one-fifth of a grain per pound was reasonably accurate for animals of from 20 to 40 pounds bodyweight, small animals took proportionately more , and heavy, less. For example, animals up to six pounds generally took one-third, and from 6 to 15 pounds a quarter; whereas a dog of 60 pounds generally took about one-sixth. The greatest amount he had given was 26 grains to an adult St. Bernard (unfortunately his scales only measured to 100 pounds): the animal's weight, however, was really immaterial because the injection was slowly continued until anaesthesia was present.

Professor Wright, with the aid of a blackboard, proceeded to demonstrate the method of restraint and injection. He attached great importance to the method of restraint, to ensure that no movement occurred during injection, and to the size and character of the needle used. It took approximately four minutes to anaesthetise the animal. In the healthy subject he injected two-thirds of the approximate dose in one minute, at the end of which he stopped for a further minute whilst the drug was being absorbed. By this time the degree of narcosis present was generally such that if the animal's head was raised it fell limply to the table. This was the first stage in induction—relaxation of the head. From that point the animal's jaw was taken as the indication of deepening narcosis. If the animal's mouth was opened it was found that it was still capable of offering resistance, whilst opening it generally provoked a yawn. He continued to inject a little more (the quantity, of course, would vary with the total dose from a quarter to one grain) and again waited 20 seconds or so. These additional injections were slowly continued until the second stage in induction was reached—complete relaxation of the jaw, with the tongue hanging limply from the mouth. By this time light surgical anaesthesia was present which was suitable for all the more simple interferences. If one stopped at that point, stated Professor Wright emphatically, the animal would not die: he said that on an experience of 1,600 cases. With experience they would soon learn that they could continue to even deeper anaesthesia with safety.

Professor Wright referred to two other surgical conditions in the dog, namely, the treatment of chronic external otitis and removal of the eyeball. Again he used the blackboard to demonstrate his methods.

Treatment of Chronic External Otitis.—In this condition the point he wished to make was that, having incised the external auditory canal, he removed triangular portions of skin rather than portions of cartilage as was generally practised. He was strongly of the opinion that no cartilage should be removed.

Removal of the Eyeball.—The operation for removal of the eyeball to which he wished to draw their attention was the one which he believed originated in America. It comprised the complete removal not only of the eyeball, but the eyelids and the whole of the conjunctival contents. The advantages claimed were that much more effective surgical cleanliness could be obtained, and by removing the whole of the conjunctival area the orbit became completely closed with a single operation.

Rumenotomy.—For the benefit of those interested in the larger animals Professor Wright had something to say on the subject of rumenotomy. Many cattle died yearly as the result of having swallowed pieces of wire, nails, etc. Many of these could be saved. The two important points were an early diagnosis and an immediate operation. The risk attending the operation was almost negligible. It was best performed in the standing position after systematic local infiltration. The speaker dealt with a number of methods by which ingesta was prevented entering the peritoneal cavity, and paid tribute to Professor Goetze, of Hanover, whose methods he explained in detail.

Finally he demonstrated a number of recently introduced instruments—tubes for endoscopy, Danish and German embryotomy instruments.

Discussion

The President described Professor Wright's address as one of the most interesting, as well as one of the most instructive, that had ever been given at a meeting of the Association—a declaration with which every subsequent speaker agreed. He would like to know how long anaesthesia continued when nembutal was

used. He was also very interested in the reference to rumenotomy, but he generally had an open sinus that would not heal.

Mr. Griffiths expressed the hope that Professor Wright might be induced to come down again and demonstrate one or two of the operations he had described that day.

Mr. Gold observed that dogs coming out of anaesthesia sometimes became very excited. Was there, he asked, any way of checking that trouble?

Mr. Tudor Hughes said the description of the operation in rumenotomy had particularly interested him, but the Professor might have reminded them of the need to put on a waterproof. The operation was quite an education in the physiology of the stomach. In colliery districts old cables thrown out of the pit were apt to cause the trouble, but one no longer found hairpins, a fact which was probably due to the change of fashion. He would like to know where this German wire which Professor Wright preferred for cutting purposes was to be obtained.

The Hon. Secretary said that what had interested him most was the description of the operation for the removal of the eyeball. He would like to know what was the percentage of cures in those cases of chronic otitis. Personally, he had found healing to be very slow. With regard to ulcerative otitis, was the length of time any criterion as to the success of the operation? Was it necessary to take any steps afterwards to prevent irritation of the wound by scratching, in order that the sutures might remain in position as long as possible? He had not found intravenous injection in the dog as easy as he would have desired: the cause might be faulty technique, but having seen Professor Wright's needle he thought he himself must have been using one that was too long: the type of needle was no doubt an important factor. Very interesting, too, was Professor Wright's calculation of the amount of nembutal required, which he thought was the most useful information he had gleaned that afternoon.

Mr. Martin said that in his part of the world they were troubled with wool balls in lambs. Would an operation in such cases be a practical proposition?

Professor Wright, intervening, said he never came across wool ball, and he would be grateful to anyone who sent a lamb to the College with that trouble.

Mr. Davidson stated that he had been specially interested in Professor Wright's series of reflexes in the smaller animals, and that he would like him to make out a series in the larger animals: he had never been satisfied with the accepted reflexes in the larger animals. In his own operations for rumenotomy, his technique was on the same general principles as Professor Wright's, and it was amazing how the patient recovered. When the subjects were slaughtered three or four years later, there was every proof that the operation had been successful.

Replying to some of the questions raised, Professor Wright said the duration of the anaesthesia was in relation to the quantity administered and to the depth of the anaesthesia. In light anaesthesia there should be a definite return to consciousness in about three hours, but in deeper anaesthesia consciousness might be delayed for four or five hours. He had tried other anaesthetics, but had discarded them in favour of nembutal because more was required to produce anaesthesia, and consequently they cost more. He had found, also, that narcotic hysteria on the return to consciousness was greater in the case of other drugs than it was in nembutal. He had been asked how he controlled this excitement. He had found only about 5 per cent. that were a little noisy, and they never hurt themselves. His own experience was that if one could induce complete anaesthesia, the patient would come out of it quietly. The Americans recommended morphia as a means of control, but he had no great faith in it, and he was sooner prepared to put up with the trouble than try to check it by such means. He would like to repeat that his only reason for paying so much attention to nembutal that day was because it had been decried in quarters where he was afraid it had not been given a fair trial. As for the control of haemorrhage, he suggested speed, dexterity and gentleness in the performance of an operation. It was his firm belief that successful surgery depended on manipulative dexterity by an operator who was also gentle and quick.

Vote of Thanks.—Mr. Dawes proposed a vote of thanks to Professor Wright, and said an address such as they had heard was a delight, as well as an education, to the practitioner who wished to keep up to date. He could assure them that he should try to persuade Professor Wright to come amongst them more often.

Mr. Tudor Hughes, in seconding, said no one could say he had wasted a minute by attending; personally, he would not have missed the address on any account.

The vote of thanks was carried by acclamation and the Professor suitably replied.

H. W. Dawes, *Hon. Secretary.*

At the close of the Sanitary Inspectors' Conference the following resolution was passed: "That, having regard to the proposed consolidation of the law relating to food, the Conference (*a*) again urges the Minister of Health to give statutory force to Memo. 62 (Foods); and (*b*) desires him to draw the attention of all local authorities to the necessity of appointing a sufficient number of fully qualified sanitary inspectors to ensure compliance with the provisions of this Memorandum."

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Oct. 11th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

Oct. 13th.—Meeting of the Derbyshire Division, N.V.M.A., at Sutton Bonington, Loughborough, 2.30 p.m.

Oct. 14th.—Meeting of the Lincolnshire and District Division, N.V.M.A., at Lincoln, 2 p.m.

Oct. 15th.—Meeting of the Mid-West Division, N.V.M.A., at Bath, 2.30 p.m.

Oct. 15th.—Meeting of the Sussex Division, N.V.M.A., at Brighton, 2.45 p.m.

Oct. 29th.—Yorkshire Division, N.V.M.A., Annual General Meeting at the Hotel Metropole, Leeds, 3 p.m.

Nov. 3rd.—Meeting of the Lancashire Division, N.V.M.A.

Nov. 9th.—**Royal Veterinary College: Opening of new buildings at Camden Town by His Majesty King George VI.**

* * * * *

N.V.M.A. CONGRESS, 1938

Glasgow the Place of Meeting

It will be remembered that this year's Annual General Meeting, N.V.M.A., selected Inverness as the venue of the 1938 Congress of the Association, with Glasgow as an alternative choice if suitable arrangements could not be made for the meeting to be held in Inverness. At the quarterly meeting of Council held on Tuesday last (the proceedings of which will be recorded in these columns in due course), Mr. Donald Campbell, the President, made an exhaustive personal report on the result of his enquiries as to the facilities available at Inverness, which had led him, with the full concurrence of the other executive officers of the Associations to determine upon Glasgow as the place of meeting for 1938.

* * * * *

PERSONAL

Appointment.—Mr. E. F. McCleery, M.R.C.V.S., D.V.S.M., has been appointed Assistant Veterinary Inspector at the Metropolitan Cattle Market, Islington, and for the City of London under the Diseases of Animals Acts. Mr. McCleery qualified as a Member of the Royal College of Veterinary Surgeons from the Veterinary College of Ireland in 1925, and took his Diploma in Veterinary State Medicine at the Royal (Dick) Veterinary College, Edinburgh, in 1927. During the past nine years he has held appointment as Assistant Veterinary Officer and Deputy Chief Inspector and Veterinary Inspector under the Diseases of Animals Acts for the Leeds City Council where he has worked under the direction of Lieut.-Colonel J. A. Dixon, T.D., M.R.C.V.S., the Chief Veterinary Officer for that City.

Mr. McCleery's departure will be much regretted by his colleagues in North-East England, where he has rendered much valuable service to the cause of professional unity, as fostered by a veterinary society of such importance as the Yorkshire Division, N.V.M.A., of which, for the past three years, he has been a most efficient and energetic Hon. Secretary—a post which, of course, he will now be compelled to relinquish. A hearty welcome awaits him in metropolitan veterinary circles, for many members in residence in London have a vivid recollection of his cheerful and successful occupancy of the onerous position of Honorary Secretary to the Provisional Committee when the N.V.M.A. met at Scarborough for the memorable Congress of 1936.

In consequence of his appointment to the City of London, Mr. McCleery will be made a "Freeman" of the City, an honour bestowed upon its senior officials.

. . . . .

Mr. Thos. Parker's 30 Years' Service as C.V.O., Newcastle

In our issue of last week we announced that Mr. Thomas Parker, F.R.C.V.S., Chief Veterinary Officer for Newcastle, was relinquishing his position at the end of September after 30 years' service. In the course of an appreciative tribute to his work, the *Newcastle Journal* observes: "Among his varied activities Mr. Parker has devoted special attention to the Corporation's Cattle Market. To him is largely due the fact that this market has shown a distinct revival in late years. It is now run on a profitable basis. It is a matter of regret that Mr. Parker is retiring before seeing the realisation of his dream of having a large combined market and abattoirs—a huge development scheme the high cost of which alone has made the Council 'furiously to think.'

"Mr. Parker has the satisfaction, however, of being the man whose suggestions put the market on its feet again, and who set the machinery in motion for the introduction of auction rings and the change of the market-day from the Tuesday to the Monday.

"A stickler for method and system, Mr. Parker revolutionised his department when he took over his duties in 1907. His books containing the statistical details of the different branches of his professional work are models of book-keeping, and have been much sought after by other authorities as a basis for clear and complete statistical recording purposes.

"In conversation with a *Newcastle Journal* representative," the article continues, "Mr. Parker outlined the fluctuating fortunes of the Cattle Market, and showed how its decline had been arrested, and how the undertaking is now returning a profit. 'But the progress made must not be arrested,' said Mr. Parker. 'There is no reason why the market should not be a much better market even than it is to-day. Now that the concern is paying its way, those attending the market should be provided with better facilities.' The adoption of the three-storey building incorporating the entire market under one roof along with abattoirs, would fill the bill admirably, in his opinion. The changed

marketing conditions, the growth of the road transport, the new legislation regarding slaughtering, and other branches of the trade, made it almost imperative for the realisation of better trading facilities for livestock in Newcastle.

"Mr. Parker recalled the anxious times when the dreaded foot-and-mouth disease visited Tyneside. The first outbreak in Newcastle was in 1912, and others took place in the years 1922, 1923 and 1924.

"It was in 1912 and some years after that the market touched its lowest level, but a considerable time elapsed before the Council agreed to Mr. Parker's suggestions contained in his report of 1912 for improving and developing the business. From the year 1922, when his suggestions were put into operation and only 21,000 cattle were exhibited, the market began to pick up, and continued until last year, when the number reached 45,000. With improved facilities for marketing, that figure can be still further increased, as Newcastle is a naturally ideal centre for dealing with the marketing of livestock."

On his retirement Mr. Parker also relinquished the duties of Chief Inspector under the Diseases of Animals Acts, and the Chief Inspector of Meat Provisions, etc., for the City. He will continue as consulting veterinary surgeon to the Northern Division of Mines Inspectorate—a post to which he was appointed by the Secretary of Mines, London, in 1925.

He is a member of the Board of Examiners for the purpose of examinations in meat and other foods under the aegis of the Royal Sanitary Institute, London, and he was likewise a member of the Departmental Committee on Meat Inspection under the Ministry of Health, London. This committee sat during 1920 and 1921.

Educated at Marchbanks School and Sandyford Academy, Newcastle, Mr. Parker, after two years at the New Veterinary College, Edinburgh, graduated at the Royal Veterinary College, London, in 1900, securing his Fellowship in 1906.

Mr. Parker served in the South African campaign, 1901 and 1902; and besides acting as veterinary officer, occupied the position of Remount Officer to Colonel Reay's column, acting under General Rundle. He received the South African (Queen's) war medal, with five clasps, and was made an honorary Freeman of the City of Newcastle in recognition of voluntary service in that campaign.

In general practice Mr. Parker was at one time stationed in London as an assistant veterinary surgeon under the County Council. Later he was also with veterinary surgeons in practice in Northumberland, Durham, Norfolk, Hertfordshire and Berkshire. For some years he carried on private practice at Morpeth.

Mr. Parker has in past years given courses of lectures and demonstrations on veterinary hygiene and on meat inspection under the educational authorities in Newcastle and has contributed usefully to the literature of his profession. He had the honour, as the result of work in Bloemfontein after the Boer War, 1902, of being the first veterinary surgeon in this country to give an original description of clinical symptoms of, and surgical operations for, epizootic lymphangitis, while he has written extensively on the subject of the tuberculin testing of cattle.

* * * * *

Birth.—On September 26th, 1937, at Marlborough House, Reading, to Elsie Mary (née Carter) wife of Hugh Curtis, B.V.Sc., M.R.C.V.S., a son.

OBITUARY

R.C.V.S. Obituary

Barnes, Charles Thomas, 25, Charles Street, Cheadle, Stoke-on-Trent. Graduated New Edinburgh, July 13th, 1882. Died September 29th, 1937; aged 79 years.

Fowle, Warwick, 25, Oxton Road, Birkenhead, Chesnire. Graduated London, December 15th, 1893. Died September 28th, 1937; aged 72 years.

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The Late Mr. Warwick Fowle, M.R.C.V.S.

It is with much regret that we record above the death of Mr. Warwick Fowle, M.R.C.V.S., which occurred suddenly from acute lobar pneumonia at 25, Oxton Road, Birkenhead. Mr. Fowle was a bachelor, and his sister, Mrs. Furneaux, of 1, Devon Terrace, Totnes, was present when he passed away. For a number of years his health had been indifferent, and recently he underwent a severe abdominal operation from which, however, it appeared that he had made a complete recovery.

Born in Devonshire, at Totnes, Mr. Fowle first started upon a commercial career, but later decided to enter the veterinary profession and proceeded to the Royal Veterinary College, in London, in 1890, from where he graduated and shortly afterwards went as assistant to Mr. Richard Hughes, F.R.C.V.S., of Oswestry. From Oswestry he went to Liverpool to assist the late Mr. Stafford Jackson. Later Mr. Fowle started in practice in Birkenhead where he remained until his death, although having retired five years ago, when his practice was taken over by Mr. J. Henry Wood, of Wallasey. Mr. Fowle, in addition to his professional work, had a large interest in a firm of undertakers and it is understood that he was chiefly resonsible for the purchase and management of their stud of horses.

Mr. Fowle was a member of the National Veterinary Medical Association and of the Lancashire Veterinary Association. Although holding no office, he was very active and a regular attender at the meetings of the "Lancashire" and could always be relied upon to make useful contributions to discussions on a wide variety of subjects. His presence at the meetings will be sadly missed.

He was a life member of the Liverpool Devonian Society and also a member of the Grange Conservative Club and a Freemason.

As a young man he was a keen and competent amateur cross-country jockey, and even when advancing age forbade such a sport he could always be seen at local point-to-point meetings, gymkhanas and agricultural shows. His services were always in great demand as a judge at shows. He was one of the honorary veterinary surgeons at the Grand National meeting each year at Aintree Racecourse, Liverpool.

Interest in the Benevolent Funds

Mr. Fowle always took a very kind interest in the benevolent funds of the profession. He was a life member of the Victoria Veterinary Benevolent Fund, and in 1929, he gave a donation of £105 in order that the annual income from the investment in War Loan, realising £5 a year, might be paid as a grant to a blind lady in whom his sister had taken an interest. When a few years later the interest on War Loan was reduced, Mr. Fowle increased his donation, because he did not wish the recipient to suffer. The lady, who was in an institution for the

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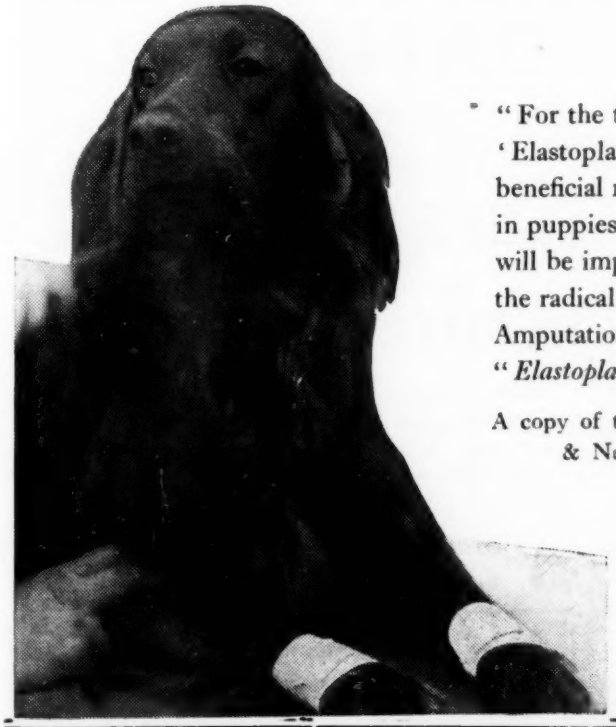

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blind, died this year and now the fund in accordance with Mr. Fowle's wishes is to be added to the general fund.

In the same year Mr. Fowle offered anonymously the sum of £100 towards a forthcoming fund to commemorate the restoration to health of King George V after his long and serious illness. He made it a condition that subscriptions to a like amount should be received from other members. Later, when it was found that more than £100 had been subscribed, Mr. Fowle allowed his name to be published and agreed to double the amount received from other sources. Ultimately a total of £238 10s. 6d. was realised, including the sum of £130 2s. 0d. from Mr. Fowle. In accordance with Mr. Fowle's wish two-thirds of this sum was paid to the Victoria Veterinary Benevolent Fund and one-third to the National Veterinary Benevolent and Mutual Defence Society.

It is proper on such an occasion as this to recall this record of benevolence, as it shows that the member whose death we all deplore had the desire to help those in need, and that he did it generously and without display.

The funeral service was held at Landican Crematorium, on October 1st, the profession being represented by Messrs. H. Sumner, H. T. Matthews, T. Dobie, J. H. Wood, A. C. Shuttleworth and J. C. Baird.

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Dr. Percy Phillips

We record with regret the death, in Cairo at the age of 57 years, of Dr. Percy Phillips, formerly Lecturer in Physics at University College and at the Royal Veterinary College, London. Dr. Phillips graduated B.Sc. from Birmingham in 1901, and later proceeded to the D.Sc. in the same University. He joined the staff of the Royal Veterinary College in 1906, remaining until 1912, when the teaching of physics was transferred to the Department of Chemistry. During the War he held a commission in the Sound-Ranging Section of Royal Engineers and saw service in France and Palestine.

Later, in 1919, he entered the Egyptian Government Service, finally attaining the position of Director of the Hydrological Section in the Ministry of Public Works. While in Egypt he did valuable work on the hydrology of the Nile Basin and in the preparation of the large irrigation projects on the Nile.

London students of the years 1907-1912 will recall the patient way in which Dr. Phillips endeavoured to make clear the elements of a subject which often appears unattractive to the biologically-minded.

. . . . .

Mr. George Whitehead

Mr. George Whitehead, who died on Sunday at Chiltern Court, N.W., after a short illness, celebrated his ninety-second birthday last month by driving his four-in-hand stage coach from Biggleswade to Cockayne Hatley, Bedfordshire.

Mr. Whitehead, who was the head of a firm of wine and spirit merchants in Bishopsgate, rode nearly every day in Rotten Row, and he was as strong an advocate of careful and appropriate dress as his old friend, Sir Walter Gilbey. He was passionately fond of horses all his life, and for years drove his coaches between London and St. Albans and Folkestone and Canterbury. Until his eighty-seventh birthday he rode regularly to hounds with the Whaddon Chase.

STATE DEPARTMENTS AND THE FUNCTIONS OF LOCAL AUTHORITIES

"Reversal of Government Policy"

The following passage occurs in a paper entitled, "The Financing of Medical and Sanitary Services" read by Mr. H. L. F. Fraser, County Clerk of Aberdeenshire, at a recent Congress of The Royal Sanitary Association of Scotland:—

"When the Local Government (Scotland) Act, 1929, was passed, the policy of the Government was declared to be the reorganisation of local government to meet modern developments of transport and discovery and to provide areas with adequate rating resources so that to the larger local authorities so established there might be a greater measure of delegation of powers. It would appear that the Government have reversed this policy, for the Maternity Act, to some extent the Housing Act of 1935, and the Trunk Roads Act and, most clearly of all, the Attested Herds' Scheme, the Livestock Industries Act and the Agriculture Act, all provide most serious encroachments on the local government field by State departments, or new statutory bodies having a status comparable to that of State departments. These encroachments are not only an increase of the powers of direction by State departments of local authorities but also, as in the Attested Herds' Scheme and the Agriculture Act, a substitution of State officials for local authorities and their officials in carrying out executive functions which have hitherto been regarded as local government functions. Local authorities have no option to carry on a local veterinary service even where their medical, veterinary and bacteriological services have been worked as an organised unit, for not only has a Government department been given powers to appoint a veterinary service for local executive duties but the Act repeals the powers of the local authorities. This Act is an excellent example of modern political methods. Its purpose was to give statutory sanction to Government promises of subsidies to agriculture for oat and barley growing, and the draining and liming of land—part of the so-called long term policy. The veterinary proposals had nothing to do with the Act as a whole, which was merely a convenient vehicle for them, difficult to oppose because of the main purposes of the Bill. The proposals were stage-managed by a competent and resolute department of State. They contained the usual mess of pottage for local authorities, namely, the offer to pay the salaries of such veterinary officers as the department decided to take over and appoint as civil servants, the promise to urban authorities that under civil service management they would have pure milk, the promise to the stockowner that he would be saved immense losses due to disease in his stock and this apparently mainly by extended slaughter for which powers are given by the Act. The serious dislocation of the services of efficient local authorities was ignored, the defence being that some local authorities had provided no efficient veterinary service. But the local authorities who had done their duty had no powers of compulsitor of other local authorities, while for over 40 years the Central Government department had such powers of compulsitor and failed to use them. The advice of the Government's accredited technical advisers, the National Economic Council, that the necessary developments should be carried out by the machinery of local government was ignored and the Bill was rushed through under a procedure which afforded no adequate opportunity for considera-

tion of its proposals except by the officials of the promoting State department, and little opportunity for opposition. What chance there was went when Scottish authorities were divided. The majority of the counties and the four cities were opposed, but a minority of the counties and the Convention of Burghs representing the large burghs decided to accept the offer of the relief of veterinary officers' salaries and express approval of the measure."

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ARMY VETERINARY SERVICE

London Gazette—War Office—Regular Army

Oct. 2nd.—Capt. R. S. T. Bowden resigns his commn. (Oct. 2nd).

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NATIONAL HEALTH CRUSADE

Described by the Prime Minister as above, a great national campaign towards a fitter Britain was inaugurated by him before a large and enthusiastic audience in London on the evening of September 30th. This event coincided with the official beginning of the operations of the National Advisory Council for Physical Training and Recreation.

Sir Kingsley Wood, the Minister of Health, and three other former Ministers of Health, in addition to the Prime Minister himself, added their support to the opening of these campaigns —Lord Addison, Lord Kennet, and Mr. Arthur Greenwood, M.P. It was an all-party occasion. In addition to Mr. Greenwood, Minister of Health in the last Labour Government, Sir Percy Harris, Chief Liberal Whip, spoke in support of these campaigns towards a fitter Britain.

The setting was the London School of Hygiene and Tropical Medicine, where a reception was held by the Central Council for Health Education for the "inauguration by the Prime Minister of the National Campaign to Encourage the Wider Use of the Health Services."

The audience was mainly composed of leading representatives of local authorities and doctors. Six lord mayors, 21 chairmen of county councils, 114 mayors, and many chairmen of urban district councils were present. In addition, the audience included many distinguished physicians and surgeons, several members of the Government, and the delegates attending the annual conference of the Central Council for Health Education.

The Prime Minister, in a speech which was broadcast in the National and Empire programmes, appealed for "a concentrated, and determined crusade against ignorance, carelessness and indifference about health services."

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FOOT-AND-MOUTH DISEASE IN TWO COUNTIES

The existence of foot-and-mouth disease was confirmed on Monday last among cattle at Fairlight, Hastings, Sussex and on Tuesday at Scamblesby, Lincolnshire. The areas subject to restrictions in the movement of animals lie in the counties of Kent and East Sussex and in the county of Lincoln respectively.

* * * * *

IMPROVEMENT OF GRASSLAND

In the course of his recent broadcast talk on "Grassland Improvement," Mr. W. S. Morrison, Minister of Agriculture, said that fortunately this question of the utilisation of our pastures more fully and profitably was one on which there were no political party differences. All were agreed that to improve our grasslands, which constituted one of the country's most valuable natural resources, must add to the nation's wealth and strengthen our equipment for the defence of our national interests. This was a matter of the closest concern to the whole community, and although the appeal he was making that night was particularly to farmers and landowners, he hoped that listeners in general would take an interest in this important, even vital, subject of grassland improvement.

Our grasslands constituted a most important natural reserve of fertility, which was capable of considerable expansion. No effort should be spared to build up that reserve until it stood at the highest level that could be reached. In this way there would also be provided for the nation a store of fertility from which, in a time of emergency, we could draw food for ourselves and our stock.

Although the farmer could rightly claim to be second to none in love for his country and desire to serve her needs, no one had a right to ask him to adopt a course of action which was uneconomic or against the best interests of his farm. The farming position was now, we had every reason to believe, a little better and the prospects brighter. Various measures had been taken by the Government with a view to making livestock a more attractive proposition. Lime and slag—two basic elements in grassland improvement—could be purchased relatively cheaply, for the Government were providing half the delivered cost of lime and one-quarter of the delivered cost of basic slag during the next three years. Further—and he would emphasise this point very strongly—many farmers realised that poor grass was poor business, and that if they had grass at all it was bad policy, even in adverse circumstances, to neglect it.

Neglected grassland deteriorated year by year. It had a very short season of production; its output was of low quality. Low quality grass led to malnutrition and disease of livestock. Proper attention to such grass would increase its nutritive value and lengthen the grazing season. This would save expenditure on feeding stuffs in the production of meat or milk, and would shorten the time required for producing lamb or beef. In other words, the farmer who treated his grass properly undoubtedly reaped his reward.

He made an earnest appeal that they should pay as close attention to their grass as to their arable fields and livestock. The stage was now set for the inauguration of a campaign for grassland improvement. Times were rather better: they could buy lime and slag on favourable terms and get all the expert help they wanted. These considerations had led the Government, in the interests of agriculture and of the nation, to decide that a grassland improvement campaign should be initiated and vigorously conducted. In that campaign the Government were enlisting the active co-operation of county education authorities and of the advisory centres throughout the country. He assured farmers that they were going to hear a very great deal about grassland improvement during the coming winter. It was because they felt sure that judicious expenditure on grassland improvement was a good investment for the farmer and for the nation as a whole that he made this appeal for their co-operation and support.

SOIL EROSION IN EAST AFRICA

A report to the Colonial Office by Sir Frank Stockdale, Agricultural Adviser to the Secretary of State for the Colonies, on his visit to East Africa early this year, deals among other matters with "the serious problem of soil erosion which faces the administrations, agriculturists and pastoralists, throughout East Africa."

He says that the situation is serious in Kenya and it is also bad in certain parts of Tanganyika. In Uganda also there is sheet erosion in the Eastern Province and both sheet and gully erosion in the more northerly parts of the Protectorate.

Before remedies can be satisfactorily applied, the true primary causes of the erosion in the area concerned must be ascertained and definite working plans evolved. The work calls for the co-operation of all and cannot satisfactorily be entrusted to any particular department. The provision of additional water supplies is the first requisite if a satisfactory spread of agricultural operations and of livestock is to be achieved. Reconditioning and anti-erosion works will be necessary over wide areas. The necessity for such work is urgent, but the work should only be undertaken after carefully prepared working plans have been made and it should not be unduly rushed if a wastage of money is to be avoided.

The soil conservation problem, however, is of such pressing importance in East Africa to-day that definite action must be taken without delay and the results achieved by the control measures adopted in the several territories should be brought under periodic review at the Governors' Conference.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

AGGLUTINATION TEST FOR DIAGNOSIS OF EPIZOOTIC ABORTION

To the Editor of the Veterinary Record

Sir,—I enclose a reply to comments made by the editor of the *Journal of Comparative Pathology and Therapeutics* on a report presented by me at the 1936 meeting of the committee of the International Office of Epizootics.

I submitted my reply originally to the editor of the above journal but he has stated that he "is unable to publish it." I would, therefore, be glad if you could find room in your columns for my reply which, I would point out, is restricted to those parts of the comments dealing with purely scientific questions.

Yours faithfully,

A. W. Stableforth.

Division of Preventive Medicine,
Royal Veterinary College, London.

September 25th, 1937.

[The above letter accompanied Dr. Stableforth's reply. (*See* page 1298).—*Editor.*]

BOVINE CONTAGIOUS ABORTION: DURATION OF REACTION TO LIVING VACCINE

To the Editor of the Veterinary Record

Sir,—The owner of a tuberculin-tested herd, in which living abortion vaccine was used until its recent prohibition, on all heifers, three calendar months before service, asked me to take blood samples to satisfy him that although a reaction in some cases disappeared very soon, in others it might persist for an indefinite period.

The following results, meagre as regards numbers, appear to support this generally held opinion. So far I have not been able to get numbers sufficient to support or negative a more important point, *i.e.*, if the infection occurs in the milk and if so, for how long. It would appear, however, that such infection is more likely to be present in cattle naturally infected, and soon after the act of parturition and immediately preceding it.

Year Inoculated	Date of Blood Test	No. Tested	Results
1930	Sept. 14th, 1937	2	One positive One negative
1931	" "	2	Both negative
1932	" "	4	Two positive Two negative
1933	" "	2	Both doubtful
1934	" "	4	All positive
1935	" "	3	Two positive One doubtful
1936	" "	4	All positive

All these cattle received one dose of 5 c.c. living abortion vaccine, freshly supplied by a pathologist of the highest repute.

No abortion "breaks" have occurred in any of these, and pregnancy has been normal and to full term. On an average, over a hundred head have been inoculated during these years in this herd, and no cases have occurred since its introduction. Less than 2 per cent. of cases of sterility have occurred.

Yours faithfully,

J. F. D. Tutt, F.R.C.V.S.

Winchester.

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THE "ROARING" OPERATION

To the Editor of the Veterinary Record

Sir,—I desire briefly to comment on Mr. Chambers' remarks, in your issue of September 25th last, on the *post-mortem* examination of a horse operated for "roaring," in which he states that on several occasions he has noticed grave alimentary and liver disturbance in horses following the administration of large doses of chloral hydrate. In this particular case I notice he gave three ounces per stomach tube, although it is common knowledge that chloral hydrate if not given well diluted, is irritating to the intestinal mucous membrane: I have always been given to understand that its irritating effects are evaded if it is well diluted. Moreover, I did not know that, as Mr. Chambers states, chloral hydrate would cause cirrhosis of the liver, the occurrence of which, in this particular case, he attributes to this agent.

Concerning the dose he gave, *viz.*, three ounces, personally for several years, I have been in the habit of giving chloral hydrate by means of the stomach tube, but I never give more than two ounces and this amount in from one-and-a-half to two gallons of lukewarm water. I find that, providing the animal has been well fasted, in from 20 minutes to half an hour, even the strongest animal commences to stagger about, frequently even lying down, in which

position one can put on the hobbles or side lines, whichever may be required.

As one who has used this drug extensively, partly to minimise the risks involved in casting nervous and valuable horses, I may add that I have also found that in any operation a much smaller amount of chloroform need be given afterwards. I would much like to hear the experience of some other veterinary surgeons, particularly regarding the alimentary and liver disturbance following its use, of which Mr. Chambers speaks; also the doses commonly employed.

Yours faithfully,
C. W. Townsend, F.R.C.V.S.

Long Stanton,
Cambs.

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INTRATRACHEAL INJECTIONS OF OIL OF CHENOPODIUM IN "PARASITIC HOOSE"

To the Editor of the Veterinary Record

Sir,—In his paper on "Parasitic Hoose" presented to the N.V.M.A. Congress at Bournemouth, Mr. R. H. Smythe states that ol. chenopodii, injected intratracheally in 4 m. doses, will kill 100 per cent. of the calves so treated. I am in the habit of injecting into the trachea a 25 per cent. mixture of oil of chenopodium in turpentine (the oil dissolves beautifully in the turpentine), the dose of the mixture being 5 or 6 c.c. After this injection I have not had any deaths which I could attribute to the treatment, and it is certainly the best treatment I have tried for parasitic bronchitis.

I would suggest to Mr. Smythe that the deaths which he supposed to be due to oil of chenopodium were really caused by the oily base. When he replaced turpentine in his injections with ol. chenopodii he increased the oily base. There is nothing worse than oil in the lungs for blocking up the small bronchioles. When a horse or bovine gets "choked" accidentally with linseed oil the animal will die, but if "choked" with a mixture in water, there is some chance of recovery. Oil of chenopodium is, however, a thin oil and when dissolved in turpentine the mixture is not oily at all. The injection of turpentine by itself into the trachea causes very little irritation and when it is injected into the warm air of the trachea it must become more volatile. Oil of chenopodium is non-irritant: carbolic acid and chloroform are both irritant and must do considerable damage to the mucous membrane of the trachea and bronchi.

Yours faithfully,
John W. Pollock.

High Street,
Helmsley,
York.
October 1st, 1937.

While under treatment with a Hampstead veterinary surgeon for a broken leg, a valuable twelve-year-old parrot escaped from its cage and has not yet been found. One theory is that the bird has gone hopping in Kent.—*Punch* (September 22nd).

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The Earl of Radnor and Viscount Portman, two of the best-known farmer-peers, are disposing of their entire herds of cattle.

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At the recent dispersal sale of the famous Hazlett herd of Herefords, which belonged to the late Mr. R. H. Hazlett, of Kansas, U.S.A., 600 odd head averaged approximately £125, realising over £75,000.

Diseases of Animals Acts

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1st to 15th Sept., 1937	19	20	1	446	5	5	—	20	8
Corresponding period in									
1936	17	18	1	69	5	5	4	40	37
1935	7	8	—	—	—	1	36	63	36
1934	10	11	2	130	4	9	26	61	40
Total 1st January to 15th September, 1937	509	616	20	4,847	96	134	139	768	455
Corresponding period in									
1936	329	389	5	448	91	223	167	1,396	995
1935	250	293	34	10,208	84	170	263	1,377	814
1934	274	312	7	584	102	169	435	1,140	715

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.